Ontario

ENVIRONMENTAL ASSESSMENT BOARD

VOLUME: 199

DATE: Tuesday, May 8, 1990

BEFORE:

A. KOVEN, Chairman

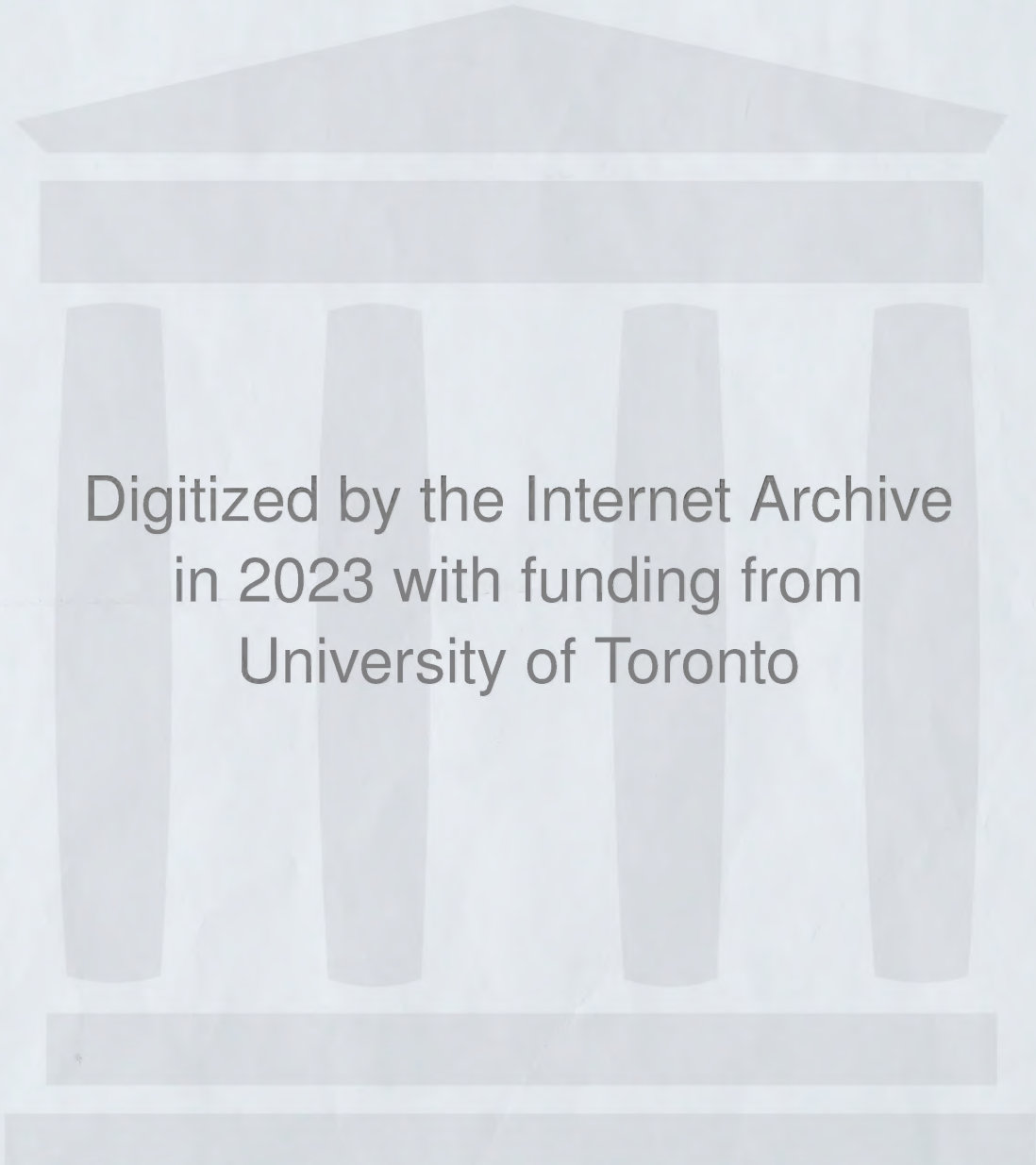
E. MARTEL, Member

FOR HEARING UPDATES CALL (TOLL-FREE): 1-800-387-8810

EARR & ASSOCIATES REPORTING INC.

(416) 482-3277

2300 Yonge St., Suite 709, Toronto, Canada M4P 1E4



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EA-87-02

HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental Assessment for Timber Management on Crown Lands in Ontario;

- and -

IN THE MATTER OF a Notice by the Honourable Jim Bradley, Minister of the Environment, requiring the Environmental Assessment Board to hold a hearing with respect to a Class Environmental Assessment (No. NR-AA-30) of an undertaking by the Ministry of Natural Resources for the activity of timber management on Crown Lands in Ontario.

Hearing held at the Environmental Assessment Board Offices, Suite 1201, 2300 Yonge Street, Toronto, Ontario, on Tuesday, May 8th, 1990, commencing at 8:30 a.m.

VOLUME 199

BEFORE:

MRS. ANNE KOVEN	Chairman
MR. ELIE MARTEL	Member

A P P E A R A N C E S

MR. V. FREIDIN, Q.C.) MS. C. BLASTORAH) MS. K. MURPHY) MS. Y. HERSCHER)	MINISTRY OF NATURAL RESOURCES
MR. B. CAMPBELL) MS. J. SEABORN) MS. B. HARVIE)	MINISTRY OF ENVIRONMENT
MR. R. TUER, Q.C.) MR. R. COSMAN) MS. E. CRONK) MR. P.R. CASSIDY)	ONTARIO FOREST INDUSTRIES ASSOCIATION and ONTARIO LUMBER MANUFACTURERS' ASSOCIATION
MR. H. TURKSTRA	ENVIRONMENTAL ASSESSMENT BOARD
MR. E. HANNA) DR. T. QUINNEY)	ONTARIO FEDERATION OF ANGLERS & HUNTERS
MR. D. HUNTER) MS. N. KLEER)	NISHNAWBE-ASKI NATION and WINDIGO TRIBAL COUNCIL
MR. J.F. CASTRILLI) MS. M. SWENARCHUK) MR. R. LINDGREN)	FORESTS FOR TOMORROW
MR. P. SANFORD) MS. L. NICHOLLS) MR. D. WOOD)	KIMBERLY-CLARK OF CANADA LIMITED and SPRUCE FALLS POWER & PAPER COMPANY
MR. D. MacDONALD	ONTARIO FEDERATION OF LABOUR
MR. R. COTTON	BOISE CASCADE OF CANADA LTD.
MR. Y. GERVAIS) MR. R. BARNES)	ONTARIO TRAPPERS ASSOCIATION
MR. R. EDWARDS) MR. B. McKERCHER)	NORTHERN ONTARIO TOURIST OUTFITTERS ASSOCIATION

APPEARANCES: (Cont'd)

MR. L. GREENSPOON) MS. B. LLOYD)	NORTHWATCH
MR. J.W. ERICKSON, Q.C.) MR. B. BABCOCK)	RED LAKE-EAR FALLS JOINT MUNICIPAL COMMITTEE
MR. D. SCOTT) MR. J.S. TAYLOR)	NORTHWESTERN ONTARIO ASSOCIATED CHAMBERS OF COMMERCE
MR. J.W. HARBELL) MR. S.M. MAKUCH)	GREAT LAKES FOREST
MR. J. EBBS	ONTARIO PROFESSIONAL FORESTERS ASSOCIATION
MR. D. KING	VENTURE TOURISM ASSOCIATION OF ONTARIO
MR. D. COLBORNE) MS. S.V. BAIR-MUIRHEAD)	GRAND COUNCIL TREATY #3
MR. R. REILLY	ONTARIO METIS & ABORIGINAL ASSOCIATION
MR. H. GRAHAM	CANADIAN INSTITUTE OF FORESTRY (CENTRAL ONTARIO SECTION)
MR. G.J. KINLIN	DEPARTMENT OF JUSTICE
MR. S.J. STEPINAC	MINISTRY OF NORTHERN DEVELOPMENT & MINES
MR. M. COATES	ONTARIO FORESTRY ASSOCIATION
MR. P. ODORIZZI	BEARDMORE-LAKE NIPIGON WATCHDOG SOCIETY

APPEARANCES: (Cont'd)

MR. R.L. AXFORD	CANADIAN ASSOCIATION OF SINGLE INDUSTRY TOWNS
MR. M.O. EDWARDS	FORT FRANCES CHAMBER OF COMMERCE
MR. P.D. McCUTCHEON	GEORGE NIXON
MR. C. BRUNETTA	NORTHWESTERN ONTARIO TOURISM ASSOCIATION

INDEX OF PROCEEDINGS

I N D E X O F E X H I B I T S

--Upon commencing at 8:30 a.m.

MADAM CHAIR: Good morning. Please be seated.

Good morning, Ms. Cronk.

MS. CRONK: Good morning, Madam Chair, Mr. Martel.

We have a number of materials to file before the evidence of these witnesses resumes this morning. The first is a series of further interrogatories; MOE No. 11, Forests for Tomorrow 32 and Forests for Tomorrow No. 33.

Could I ask that that be the next exhibit.

MADAM CHAIR: That is Exhibit No. 1146.

MS. CRONK: (handed)

MADAM CHAIR: Thank you.

---EXHIBIT NO. 1146: Package of Interrogatories: MOE No. 11, FFT Nos. 32 and 33 for OFIA/OLMA Panel 8.

MS. CRONK: The next matter, Madam Chair, you will recall that last week at our request an exhibit number was reserved, Exhibit No. 1143B, for four original photographs dealing with stem volume data to which Mr. Nicks will be referring in the course of his evidence, and those photographs are available for filing with the Board now and copies for my friends.

(handed)

MADAM CHAIR: Thank you.

---EXHIBIT NO. 1143B: Copies of four original photographs re stem volume data to be referred to by Mr. Nicks in his evidence.

MS. CRONK: The next materials, Madam Chair, are a series of additional overheads to be referred to in the evidence of Mr. Nicks, they are three in number, and I would ask that they be given the next exhibit number.

MADAM CHAIR: That's Exhibit No. 1147.

MS. CRONK: (handed)

MADAM CHAIR: Thank you.

---EXHIBIT NO. 1147: Hard copies of three overheads to be referred to by Mr. Nicks in his evidence.

MS. CRONK: The next documents, Madam Chair, are a series of two additional documents to be referred to by Mr. Waddell in the course of his evidence.

The first is a photograph of a slide to which he will be referring and the second is a photocopy of an overhead to which he will be referring.

MADAM CHAIR: That's Exhibit 1148.

MS. CRONK: (handed)

MADAM CHAIR: Thank you.

---EXHIBIT NO. 1148: Photocopies of a slide and an overhead to be referred to by Mr. Waddell in his evidence.

MS. CRONK: And I am providing the Board as well with two original copies of the photograph which form part of Exhibit 1148. (handed)

MADAM CHAIR: Thank you.

MS. CRONK: And then finally, Madam Chair, Mr. Martel, I thought it perhaps might be useful to provide some kind of an indication of timing to the Board at the outset this morning, and in light of the material that was covered on Thursday last in Thunder Bay it's my hope to complete the evidence of these witnesses today, I will certainly try to do so, it will be close.

And, in the event I do not, it may be that the evidence-in-chief may go into the morning a little bit, not very long, but we are going to make every effort to try and finish today.

And we ended last Thursday, as the Board will recall, with the evidence of Mr. Gemmell - where are you, if I can find you, Mr. Gemmell - concerning the renewal activities in his case study, and I would like to pick up there if I could, and turn to Mr. Squires next and ask him to deal, if he would, with the renewal activities involved in his case study; that is,

case study 4C, the Board will recall, Abitibi-Price Inc. Lakehead Woodlands Division forming part of Exhibit 1100.

JAMES WADDELL,
MALCOLM SQUIRES,
JAMES RODERICK GEMMELL,
MURRAY FERGUSON,
PETER MITCHELL MURRAY,
BRIAN NICKS, Resumed

CONTINUED DIRECT EXAMINATION BY MS. CRONK:

Q. And, Mr. Squires, can I ask you first: Were you personally involved in the planning and implementation of the renewal activities referred to in case study 4C?

MR. SQUIRES: A. Yes, I was, Ms. Cronk.

Q. And how long have you been involved in renewal activities in timber management in the area of the undertaking?

A. In the area of the undertaking, two years in Sault Ste. Marie and 10 in Thunder Bay.

Q. And during the entire course of your career?

A. Approximately 27 years.

Q. With respect specifically to your company's case study, could you remind the Board first where it is located? I have put up Exhibit 1105 for you in that regard, and could you just reacquaint us

with what you are going to be talking about?

A. Yes, I can.

The Board will remember that I will be speaking to the Spruce River Forest which is located north of Thunder Bay and is coloured in yellow on the west side of Exhibit 1105 and referred to as the Abitibi-Price Spruce River Forest case study area. The case study area is located in the southeast corner of the FMA.

I would next like to show the Board Exhibit 1110, again to highlight the location of the case study within the Spruce River Forest. The case study again in the southeast corner, as described earlier accessed by Highway 527 running north through the Spruce River Forest and the Dorion cut-off or Wolf River Road running east to the southeast corner of the Spruce River Forest through the case study and then exiting to the east from Highway 11/17.

Q. And can you remind us, Mr. Squires, how large the cause study area is?

A. The case study area is 192 hectares.

Q. And how many blocks or stands are involved?

A. There are three blocks involved in the case study area, Madam Chair. I have an overhead

which I would now like to show, an overhead of Figure 2 found on page 6 of the case study, if Mr. Ferguson will help me here.

This shows the three blocks of the case study; block 5 coloured in red, block 6 coloured in yellow, and block 10 coloured in green.

The nature of the case study is that at the time that renewal efforts were begun it was primarily in the hardwood working group. The stands however were, initially on the case study area prior to initial harvest were primarily in blocks 5 and 6, those of softwood working groups and in block 10 a hardwood working group. The species present were black spruce, white spruce, balsam fir, poplar and white birch.

The area was described as a part of the spruce-fir hardwood mixed wood working group -- not working group, I am sorry, cover type, and in that context we look at stands that have at least 10 per cent hardwood content.

On the Spruce River Forest such stands make up approximately 40 per cent of the cover type and they are found throughout the area of the undertaking in some form or another.

Q. And just dealing with the blocks that you have described in terms of the species present and

their characteristics, were they similar or dissimilar?

A. The block 5 at the time the renewal started was primarily of an NSR condition, barren and scattered, regenerating to mixed hardwood shrub; block 6 was somewhat similar with one or two mature stands of softwood and mixed wood; and block 10 was primarily a mixed wood stand of poplar working group and spruce, balsam fir present.

Q. When were these blocks harvested?

A. Blocks 5 and 6 were harvested in 1954-1956. Blocks 5, 6 and 10 were harvested again in the 1971-1975 period and again in 1981-82.

Q. Well, just dealing with the period after the harvest in 1981-1982, could you outline for the Board, please, what the renewal options were that were available at the time?

A. Yes, I can. Madam Chair, I would like the Board to go to Appendix 1 of the case study 4C. The appendix will be found immediately after page 42.

Having the appendix, if we were to first go to page 2, and I refer the Board to the column Site Description - and we won't spend much time on this page it's merely to point out that we are in (B) Mineral Soils.

Seeing that, we move to page 3, and I would like to draw your attention to Mineral Soils, Site Type 2, deep well drained, that's site (B)2. The soils there are silt to loam, well drained.

If we go to the next column of working group we see a black spruce working group which was the inventory prevailing -- inventory working group prevailing on blocks 5 and 6 prior to initial harvest. The next column speaks to the treatment. The treatment for such site conditions in that working group are to site prepare to rearrange slash, expose mineral soil for 800 planting chances per acre and plant 800 black spruce per acre.

Additionally I would like to refer the Board to page 5 and Site Type (B)6. (B)6, we are looking at deep, well drained glacial tills to deep silt mineral soils with working group poplar or white birch.

This latter inventory working group was the one that prevailed, as I was saying, at the time the renewal efforts began, the signing of the FMA. The treatment for (B)6 is almost identical -- is identical to that in (B)2; namely, the preferred treatment is to site prepare and rearrange slash, expose 800 planting spots per acre and plant 800 black spruce per acre.

There is a second option available and that was to have no treatment, which this table implies, leaving the area for natural regeneration. There was an additional option as -- comes from the fact that this area was covered by the NSR survey. The NSR classification Class 3 for spruce required the company to regenerate the area to spruce because of the intense competition on the site, however, that required site preparation and planting.

Q. What then were the options that were in fact chosen on these three blocks that you have indicated in Figure 2?

A. The option that was chosen, Madam Chair, was to regenerate to black spruce because it was the preferred species in the company's mills and to plant because this land was fairly productive and was the nearest land to our company mills within the FMA, and planting again because the soils were relatively fertile and they promised high yield to our efforts.

Additionally I refer to the NSR obligation which was to regenerate to black spruce and planting was the only practical option in that case.

Q. What were the options, Mr. Squires, with respect to site preparation?

A. The option with respect to site

preparation were to have no site preparation, there was the option of chemical site preparation, a third option of mechanical site preparation - when I am itemizing these, I mean that they would be single treatments alone - a fourth possibility was the combination of the previous two treatments, chemical and mechanical, or multiple treatments.

Q. And what was in fact done with respect to these blocks for site preparation, what were the options chosen?

A. The ground was inspected in 1981 prior to the signing of the FMA in anticipation of the eventual signing. Our field supervisors went out, walked the area and investigated the various factors that prevailed.

They concluded that chemical site preparation with 2,4-D was an appropriate application at that time to prepare the ground for mechanical site preparation. Our company had experience with 2,4-D and it appeared to be what was necessary in this case. It was mostly broad leaf shrubs and advanced growth that we were looking at. We anticipated resprouting would occur if we were to just use mechanical equipment on this site without trying to kill the brush ahead of the mechanical treatment. Additionally, the broken

material from the mechanical treatment would prove a safety hazard to workers in follow-up treatment.

The chemical treatment was to be followed by two mechanical treatments. This was recognized at the time as heavy site preparation, however, it was required because of the advance stage of the competition on the site, the brush and poplar suckers and cull trees - or chicots as we call them - even if dead from chemical site preparation, would be a safety hazard to follow-up planting.

The Marden Chopper was chosen to crush the material and mulch it, that is to incorporate it into the surface organic material. This would reduce the tendency for the soils to frost heave and because of their fine texture also prevent them from drying out in the possible drought situation.

We anticipated that following the Marden chopping there would be a profuse grass growth and we anticipated that because of past experience on similar sites. Knowing that, we planned to use the Bracke patch scarifier. This would create the required 800 planting spots per hectare on the site and it would also help in preparing a preliminary advantage for the season over the expected competition. The Bracke, I should mention, was similar to that depicted by Mr.

Ferguson in the slides of last Thursday.

Q. Well, you have indicated, Mr. Squires, that this was recognized as being in combination heavy site preparation; did I hear you correctly in that regard?

A. That's correct, yes.

Q. Well, in general or specific terms, whichever is appropriate, what did the company perceive to be the benefits of that approach on these blocks?

A. Madam Chair, the anticipated benefits of this approach of heavy treatment, site preparation was the effect it would have in reducing initial competition and lowering future seed mortality on the site, future tree mortality on the planted seedlings. It gave us an increased choice of planting microsites and would result in better survival from that aspect as well better growth and survival.

It would increase the initial tree growth, this would give the seedlings a particular advantage over the later developing competition which we also anticipated in the form of raspberry particularly.

It would also give better control over planting stock utilization through better spacing. It would provide safer conditions for the planters and,

additionally, would improve the planting productivity.

Q. Why was chemical site preparation as a prelude to mechanical site preparation necessary, Mr. Squires?

A. The chemical was necessary in order to kill the woody vegetation, which I will try to describe. It was two to three inches in the diameter in some cases, and a lot of it about one inch diameter and the mechanical treatment would merely bend that over and it would become almost like daggers, if you were to walk up against them and strike them in your chest or your eye, so the potential was there for very serious injury to planters.

So we killed the brush with the 2,4-D and gave it time to dry out. So that when the mechanical operations took place, the brush would then be crushed, chopped up, incorporated into the soils relieving the safety hazard.

Q. And why two mechanical site preparation treatments instead of just one?

A. As I mentioned this was looked upon as heavy, however, under the circumstances on this site we felt there was no alternative, we (1) had to get the very dense regrowth back to the ground. The Marden Chopper we had experience with on such conditions and

we felt it would break that material down very effectively. It was chosen also because of the benefit it would have for the site in that it would not remove the duff layer or organic layer from this prime soil, so following treatment with the Marden there would be a complete organic cover.

Q. Well, can you describe to the Board how these site preparation treatments were in fact carried out, what was actually done, and perhaps relate it on which block, when?

A. Chemical site preparation was carried out on blocks 5 and 10 in July of 1982 using 2,4-D. The chemical was applied aerially because of the large amount of brush and residuals which would impede ground application. This would cause fluctuations in the application rate because of the variable travel speed.

Additionally, the areas were relatively large and time constraints associated with mechanical site preparation and production targets were in conflict with the lower outputs per hour of ground spraying. So what I am saying there is that really we didn't have time to use ground spraying, we would have lower productivity, in order to meet the time necessary to get the mechanical site preparation done prior to freeze up.

Q. And when was the mechanical site preparation done?

A. The mechanical site preparation was done August through October, right into freeze up. I would like to now show the Board some slides, if I may, if we can turn off the overhead, please.

The slide which I now have on the screen is slide 7.2 of case study 4C. It depicts the Marden Chopper. The Marden Chopper is here being pulled by a D-8-K tractor, behind the chopper are two rolling drums on a cable extended behind the tractor.

The location of this photograph is not on the case study area, it's on the Mooseland Road north of our camp 230 on the Spruce River Forest, but it is a condition similar to that which prevailed on the case study area prior to the beginning of site preparation. The Marden here is knocking down advanced hardwood brush as on the case study incorporating it into the organic layer.

This is photo 7.3 of case study 4C, as all of the following slides will be from case study 4C. Photo 7.3 shows us a picture -- a closeup of the ground immediately after a pass by the Marden Chopper. It again is not on the case study area, in fact in this case we are looking at the result of the Bracke -- or

the Marden being used on softwood slash versus hardwood slash which prevailed on the case study area.

The purpose of the photograph is to show how the material is generally broken up with the exception of the very large material and it is actually pushed into the soil and will act as a mulch. The organic material does remain completely in tact over the mineral soil layer.

On the case study area the Marden was having difficulty because of boulders causing structural damage to the equipment and it was having very low production. An additional tractor was called in to assist when difficulties arose. The latter tractor was used to blade the area that the Marden was unable to treat because of boulders and other obstructions and the lower than anticipated productivity of the Marden is explained.

We were somewhat concerned with using this blading treatment on this particular site because of the potential for exposed mineral soil. We, for that reason, took particular care and closely supervised it and had frequent discussions with the operator and had him use the blade constantly so that it was not unfloat which would have caused it to dig in and remove the organic material. With the blade raised

slightly above the surface it was shearing off the brush fairly effectively and we felt we had an appropriate site treatment. The result was that some mineral soil was exposed but not excessive.

This is photograph 7.9 taken in the late spring of 1983 in block 6. The mineral soil exposure is visible in this area. This is an area that was bladed. The green areas on the ground are grass cover. The reddish brown areas are exposed mineral soil.

On this area treatment to exposed planting microsites was not necessary and the concern about the mineral soil here was that seedlings would possibly be frost lifted through frost action in the spring and fall and there could also be, as I mentioned, drying out. That did not occur and because of the small area of mineral soil it was not a problem in the area. Additionally, we took precautions in the planting to make sure we planted our black spruce seedlings deep which we would recommend for black spruce.

The result of all the site preparation was that block 5 had 10 hectares Marden chopped and block 10 had 61 hectares Marden chopped, and block 6 was entirely bladed, and all but the 10 hectares of block 5 that was Marden chopped was bladed.

Q. What was actually done, Mr. Squires, to create the planting spots?

A. The planting spots on the Marden chopped area were created with the use of a Bracke patch scarifier. That treatment took place on 71 hectares, we mentioned 10 hectares of block 5 and 61 hectares of block 10. The Bracke in this way created a pattern for the planters.

On the bladed area that pattern did not exist and closer supervision of the plant took place to organize that pattern.

Q. Is Marden chopping in that fashion still practised today?

A. No, it is not.

Q. What were the actual alternatives for planting that were available?

A. The alternatives, Madam Chair, for planting were clear in the groundrules. They specify black spruce as the only planting species alternative. The remaining alternatives, therefore, in planting were those of stock type; that is, bare root and container stock.

Q. And dealing just with the planting component of it, what was actually done?

A. We will now go to photo No. 7.11.

The stock type chosen was paper pot container stock because containers were available and they were satisfactory, the quality was good, and the company at the time was not satisfied with the bareroot stock that was available to us.

The largest stock in the container stock available to us was chosen and the large stock was chosen to ensure that the seedlings would have a chance to compete with the now heavy grass that was developing.

This slide that I have here represents the actual crop that was planted on the blocks. One other crop of equal stature was planted on the remainder.

This is photograph 9.1 and it shows the condition in block 5 in the fall, November of 1988, that is six growing seasons after planting. The area in block 5 that this was located in was in the bladed area, so the grass is still present, some brush, but essentially the plantation is free of competition.

Q. How tall are those trees, Mr. Squires, in photo 9.1?

A. The average height would be somewhere approximately three quarters of a metre tall or trees up to two metres tall at that time.

Q. And what is all the brown area as distinct from the green?

A. The brown area is grasses primarily with some raspberry and some hardwood brush. The most prevalent hardwood brush there is red osier dogwood and beaked hazel.

Q. I can't hear you, sir.

A. The most prevalent brush species there are red osier dogwood and beaked hazel.

Q. And what form of training did your staff receive to carry out that planting effort?

A. In the spring of 1983 our planting supervisors were given a one-week training period prior to the start of the plant and this has actually become a routine at Lakehead Woodlands for all of our planting.

The subjects taught to them ranged across a number of managerial approaches but relative to the plant. We emphasized strongly planting quality, in fact we had a two-day session on planting quality, interpretation of stock standards and variabilities of a particular site that each supervisor was going to work on. They had a one-day period on the site and all the interests of the site were explained to them and in particular precautions that they should be taking in

planting.

In addition to the supervisory training, the planters themselves received a one-week on the job training at the start of the planting. During that period they were very closely scrutinized, one-on-one in many occasions during each day and the quality was assessed for various refractions and at the end of the one-week period each individual planter was expected to have achieved a quality standard of 85 per cent of planted seedlings being totally acceptable. Anyone who failed to meet that standard was removed from the planting program.

Q. When was the planting actually done?

A. The planting was actually done in May/June of 1983.

Q. Now, we have heard evidence from certain of your colleagues on the panel about the efforts made by their companies to maintain quality control, if I can describe it that way, over planting efforts. Were any efforts of that kind carried out by your company?

A. Yes, there were. And for the Board's benefit, Madam Chair, I would like you to go to Appendix 2 of the case study 4C which is found immediately after Appendix 1.

Q. Can we turn the light back on, Mr. Squires, or are you going to be dealing with any further --

A. I think we can turn the lights back on.

At Appendix 2, which will be three pages, the first page is the actual field tally sheet that the quality assessors used on the block 5 of the case study. It shows a circular plot on the left which shows the best of the supervisor's ability to locate the individual planted seedlings in a sample plot, and we see two columns describing the number of plantable spots available, trees planted, whether or not there were excess trees.

The next column, unsatisfactory planted trees, describes from six different standpoints the quality of the individual seedlings that were sub-standard, and then we have a summation of the number of satisfactory trees and calculations relative to the average quality.

Q. Do all of these materials in Appendix 2 relate to field assessments of planted quality, Mr. Squires?

A. Yes, they do.

Q. And who actually completed these

forms or who in the normal course completes them?

A. These forms were actually completed by the crew boss, that would be the person who supervises approximately an average of eight planters, maybe up or down one or two people, depending on the difficulty of the particular site.

If we go to page 2 we will see a summary then of the overall unit boss for that day. He had five planting crew bosses working for him and he averaged their daily quality and that page then would be utilized in the two previous pages to talk to the planters at the end of the day to correct the problems that they were having.

The third page of that appendix merely shows a map locating the individual plots and the layout of those plots on the area. The centre of the map shows block 5 and the layout of the quality assessments along the lines on that block.

Q. Was there any form of equipment used to carry out the planting effort?

A. The equipment used to carry out the the planting effort was a potaputki planting shoot that I believe the Board is probably familiar with.

Q. Can you illustrate for the Board what the planted stock looked like, Mr. Squires? Are you in

a position to describe for the Board what you planted?

A. I can go back to a slide which I had there which showed the planting stock.

Q. All right. Now, you mentioned in your evidence, as I recall what you said, there was an effort made to get the tallest stock available?

A. That is correct.

Q. And why was that?

A. The reason we wanted the tallest stock available was that our experience with the heavy grass that we anticipated that would arise on this site was that tall stock placed in tall grass did not grow much in height the first year but it grew a lot in caliber, and we anticipated that caliber would give the tree seedling strength to bear up under the bent dead grass under the snow load during the winter.

We are pleased to say that we were right on that count, the tree seedlings did grow quite a large amount in caliber the first season planted out and we lost almost none that first winter to snow load.

Q. Can you outline for the Board, if you would, please --

MADAM CHAIR: Excuse me, Ms. Cronk.

MS. CRONK: Yes.

MADAM CHAIR: Can I ask Mr. Squires a

question? Are all the seedlings one year?

MR. SQUIRES: These seedlings here, Madam Chair?

MADAM CHAIR: Yes. You are talking about selecting the tallest seedlings, are they one-year old?

MR. SQUIRES: Those seedlings, Madam Chair, were sown in March of 1982, they were grown in greenhouses through to the second week of August. We intentionally retained them -- requested they be retained in the greenhouse for an additional two weeks to get that additional heighth and a bit more caliber. It was probably pushing it a bit for the size of the container, but with the site we were going to be working on we felt that proper site preparation we were not going to have a moisture problem and the root that we would have in the container would be an adequate root for the site conditions.

So we grew them a total of 18 weeks in the greenhouse. They were then removed from the greenhouse, allowed to pardon off through the remainder of August and into the fall and be stored outdoors in the shade area which is visible on this slide. The shade areas were to prevent premature snow melt in the spring, so the shade would be used to maintain that snow and make sure it accumulated in the first place on

them and prevent early bud flush and keep them in prime condition in the spring so that they did not get early winter drying and in fact there was almost no loss in that crop, everything went according to plan and we got our large seedlings which we got into the bush.

To really answer your question, they were about one-year old.

MADAM CHAIR: Has any work been done in terms of planting older seedlings, maybe two years old; in other words, do nurseries ever keep surplus stock that isn't used that year and use it in subsequent planting seasons?

MR. SQUIRES: In the form of containers, we have used two-year-old seedlings and we are quite satisfied with them, but we find that if we can get first-year stock this size, we don't need that two-year-old seedling in the form of bareroot.

Yes, there is usually one and a half -- one and a half; that is, transplanted bareroot stock black spruce available, and recently at the Thunder Bay nursery we have been able to get some G+2, that is stock that is grown in a greenhouse for a part of a year and then transplanted and remains in the transplanted bed outside for two years.

So, yes, there is larger stock available.

Today we find that stock quite acceptable.

MS. CRONK: Pardon?

MR. SQUIRES: Today we find that large bareroot stock quite acceptable to us, however, we also find this acceptable.

MADAM CHAIR: And what is the difference in cost for older bareroot stock.

MR. SQUIRES: I am afraid, Madam Chair, I am not aware of the difference in cost between container and bareroot. The difference in cost between this large stock relative to small stock is non-existent, it's the same cost.

MADAM CHAIR: From the point of view of the nursery they would have I think more control over their operations if they could store bareroot stock in that sense rather than using everything up on an annual basis.

MR. SQUIRES: That is correct. They can store to a limited extent in the ground of course, but then your trees tend to get too big. So it's very important that they be lifted and stored in proper cold storage.

I would like to add on that count that we have experimented in co-operation with the Northwest Ontario Forest Technology and Development unit on

storing container stock in the same way. We hope to be able to achieve, in fact we are confident that we can pre-grade our stock prior to it going to the field and have it over wintered in cold storage and we will be delivering one hundred per cent satisfactory seedlings to the field.

MS. CRONK: Q. Does the Industry, Mr. Squires, run any of the nurseries in the area of the undertaking, or is that the function of the Ministry of Natural Resources and public growers?

A. Currently, I would speak for the Spruce River Forest, Madam Chair. The Spruce River Forest is in 1989 and 1990 receiving all of our seedlings from private growers and the like which we take under contract with the grower.

We do not own our own greenhouses or nurseries, but the Ministry does not contract the trees for us anymore. I am not sure if I've answered your question there.

MADAM CHAIR: Yes, thank you.

MR. MARTEL: Who pays for those? Does the company pay directly or does MNR supply them?

MR. SQUIRES: Mr. Martel, the MNR supplies a flat rate payment to us per Schedule D of the groundrules.

MR. MARTIN: Okay.

MS. CRONK: Q. And are you in a position, Mr. Squires, with respect to this particular case study area to describe to the Board what results were achieved or not achieved following the site preparation and planting efforts you have described?

MR. SQUIRES: A. Yes, I am. I would like to go again to my slides to help you with that.

Q. I knew the minute I turned this off you would need it.

A. That's the slide I should have spoken to earlier. If the Board will allow me, I will now speak to it.

I mentioned earlier that black spruce prefers to be planted deep and we discovered this from our quality assessments in plots that we have out in the plantations to determine the effect of our techniques.

This is a paper pot black spruce. The paper pot can be seen at the extreme bottom of the root in direct line with the trunk. It is still in a plug form but the main root mass that is visible on this seedling is from roots that have either exited from the top of the paper pot or are in fact within two inches of the top and above the top and adventitious roots.

Black spruce is a prolific adventitious rooter and so we take advantage of that by planting our seedlings deep. This gives us much more rooting area and an additional force to pull.

Q. What do you mean when you say that it's an adventitious rooter?

A. It's a root that is not on the seedling before it was planted, it's a root that has grown above the old root bulb from the main stem of the tree in this case after planting.

Q. Is that what they look like, Mr. Squires, when you planted them?

A. No, they are much smaller than this and the roots are practically all contained within the paper pot which is planted in this case with the tree seedling.

Q. So this is the system that develops over time, the root system?

A. That is correct.

Q. And turning then to the results generally of these renewal efforts.

A. I have here slide 7.15, Madam Chair, was taken in the fall of 1988, it is of block 6 and visible in this slide is the some trees that were left during all three harvests because they were immature,

but the small black spots that are visible scattered all over the snow - which incidentally is about half a metre deep - these black spots are the planted seedlings.

And what I would like the Board to be able to see here, if you can, is the complete coverage that those planted seedlings, that there are very few gaps and we have planted right up to the base of the standing trees, so that there is no unplanted area.

MADAM CHAIR: Mr. Squires, the trees you talked about leaving, would you call that advanced growth? You said they were too immature to cut.

MR. SQUIRES: I would think, yes, they would qualify as advanced growth, however, they are much larger than what you would normally be thinking of when we mention advanced growth. They have enlarged considerably since the cut 10 years ago or eight years before that.

MS. CRONK: Q. And, Mr. Squires --

MADAM CHAIR: Ms. Cronk, sorry. Could I just ask you a question? Do we say advance growth and advanced growth interchangeably.

MS. CRONK: Mr. Squires?

MR. SQUIRES: I certainly do.

MADAM CHAIR: All right. Good, so do I.

MS. CRONK: I knew what the answer for me was, but I wasn't sure it was correct.

Q. Mr. Squires, what photograph number is that, please?

MR. SQUIRES: A. That is photograph 7.15. Did I say 7.15? That should be 7.17.

Q. And dealing with the assessments themselves that were carried out on the case study area, what were the results reported by the company?

A. In 1985 we carried out the survival assessments and we got 93 per cent survival second year, and at that time 77 per cent of the seedlings were in the healthy to vigorous condition.

Subsequent inspections have shown that the per cent that was in a healthy to vigorous condition has improved, so that they are now across the case study area between 85 to 90 per cent in the healthy to vigorous condition.

A fifth-year assessment which was carried out in 1988 showed that 100 per cent of the case study area met minimum standards of 40 per cent stocked. And I would like to add that at this time we are quite pleased with the results on all of the case study area. There is basically no difference in the results across the whole case study with one possible exception, the

trees on the bladed area do appear to be taller than those on the Marden chopped area.

Q. And does that complete the slides or photographs that you wish to show the Board, Mr. Squires?

A. I would like to show the Board one more slide at this time. This is a slide of block 10 and it is shown to illustrate the pattern that came from the Bracke site preparation where the microsites for planting are located at fairly regular spacing.

Q. And how many years after planting was that photograph taken?

A. This photograph was taken in the fall of 1988, six growing seasons after planting, and the ground has a half metre of snow on it.

Q. And what photo number is that, Mr. Squires?

A. That's photograph 7.18.

Q. And finally, when did you say the fifth-year assessment was carried out with respect to the case study area?

A. 1988.

Q. Thank you very much, Mr. Squires.

Mr. Squires, one other matter, if I might, with respect to your evidence. Have you had an

opportunity to review the transcript of your evidence given on Panel 4 with respect to the case study area?

A. Yes, I have, Ms. Cronk.

Q. I understand there is a clarification you would like to make for the Board?

A. Yes, there is, Madam Chair. I would like to refer the Board to transcript Volume 191, pages 33609 and 33696.

At that time I expressed the view in responding to a question from you, Madam Chair, that the volume of renewal carried out on company licensed areas versus the volume of renewal carried out by the company on our FMA area is not comparable. I wish to inform the Board that at that time I misspoke and I have since had an opportunity to review the numbers.

I have compared the levels of renewal for the period April of 1981 corresponding with the beginning of our FMA to the 31st day of March 1989, the last complete year that we have a record for, and I find that the level of renewal is higher on the FMA but not significantly so when we look at all of the company licensed areas.

Q. And were you, when you gave your evidence on Panel 4, Mr. Squires, intending to express any opinion as to the level of renewal activity on

Crown management units as compared to forest management agreement areas?

A. No, I was not. I was responding to the question relative to the company management units.

Q. And are you in a position to offer any opinion or observation concerning the level of renewal on CMUs versus FMAs?

A. No, I am not.

Q. Have you had any experience working on CMUs in the area of the undertaking personally?

A. No, I have not.

Q. Could I turn next then to Mr. Murray. There you are.

MR. MURRAY: A. I am here.

Q. I would like to deal with your case study.

MS. CRONK: The Board will recall that this is case study 4E on behalf of G.W. Martin Logging Limited.

Q. And again, Mr. Murray, as your colleagues have, I am going to invite you to outline for the Board, if you would please, the renewal activities described in that case study.

And perhaps you can start again by acquainting the Board generally with the area about

which you will be talking and then proceed and outline the renewal options that were available.

MR. MURRAY: A. Mr. Martel, Madam Chair, I have to -- I am sure you are quite familiar with Exhibit 1105 and the location of the G.W. Martin case study 4E, it is now approximately 250 kilometres north of our present location as opposed to where it was when we were up in Thunder Bay.

It's in the Great Lakes/St. Lawrence Forest region which is an area something like that. It is in the tolerant hardwood cover type and the maple working group. It's located on the Bracebridge Crown Management Unit, one of 29 Crown management units that are found in the Great Lakes/St. Lawrence area, producing material or forest products for many small operators that are found in the Great Lakes area and forest products for the entrepreneurs in the area. It was harvested in August of 1986 and using the selection system.

Q. And following the harvest, Mr. Murray, what were the renewal options available for this area?

A. The renewal options were decided by the Crown management unit forester. He, using his -- using the FRI data, the operational cruise data that

was obtained for the operating plan of 1985-90 and using his extensive knowledge of his Crown unit identified the selection system -- silvicultural system as the appropriate harvesting method for the area, and he made that assumption on the basis of the fact that there was an adequate crop there of future trees that met the minimum basal area and there was adequate advanced regeneration.

The unit forester also referred to the Algonquin silvicultural guidelines applicable to that Crown management unit and identified -- and they identify that regeneration will be natural and that there will be no site preparation.

On the tolerant hardwood maple working group it's something of a global concept, as the Board will remember, the harvesting, the renewal and the tending are all basically tended to at the one time, you know, at the time of harvest.

Q. How is natural regeneration obtained under that system?

A. Well, the natural regeneration of course, again as the Board has been told, was obtained as advanced regeneration. The silvics of maple make this the appropriate type. Maple, as you will remember, is a specie which is very tolerant and being

a very prolific seeder, the ground will be covered with many young seedlings, prior to opening up during to the harvest. The advanced regeneration is protected during harvesting by careful logging.

And the other form of regeneration, seed -- during the logging operation there can be some scarification of the site, disturbance, which will make a seedbed suitable for other species as well as maple such as yellow birch, hemlock, et cetera.

So the advanced regeneration is by pre-seeding and establishment of young maple and there will be some amount of seeding as well.

Q. And then dealing specifically with this case study area, Mr. Murray, in brief, what were the results -- what are the results to date available concerning the regeneration achieved on this site?

A. Well, unlike my colleagues who have been reporting on the results of their case studies in which the success is measured by the establishment of a stand of young forest following a clearcutting system, the selection system is a continuum of trees from the seedling to the harvest and I think the best method of reporting on the success is to report on the ultimate objective of the unit forester and on the production of forest materials that will be cropped every 20 year on

the cutting cycle basis.

I would like to just read from the Exhibit 1137, that is the renewal statement on page 30, Section 1.2. I should just read the paragraph, if you wish. It's under Renewal Activities on Crown Management Units:

"The Industry's responsibilities and role in timber management on FMA Crown lands is to be contrasted to the current arrangements for the management of Crown management units (CMUs). The Industry has no direct involvement with or responsibility for renewal activities on most CMUs. The exemption is that on certain CMUs selection and uniform shelterwood operations are carried out. In these situations the Industry contributes to renewal efforts by adopting the harvesting practices which remove poorer quality trees and leave better quality residual trees for a future harvest."

That kind of sets the tone for the results. The next evidence I would like to present would be request the Board to refer to case study 4C,

actually it's Exhibit 1102 which was an errata. It's Table 7. Table 7 is located on page 32 and the errata that was distributed as 1103 made several corrections.

MS. CRONK: Could I just have a moment, Mr. Murray. My 1102 is holding up the projector here.

MADAM CHAIR: That was 1102, Mr. Murray?

MR. MURRAY: 1102 according to my notes was an errata. It was to replace page 32 in the case study.

MADAM CHAIR: Mm-hmm.

MR. MURRAY: Actually the errata is not a part of what I am going to be referring to, so...

MADAM CHAIR: Table 7?

MR. MURRAY: It was Table 7, that's correct.

MADAM CHAIR: Thank you.

MR. MURRAY: Table 7 is the result of a comparison of a post-cut cruise which was done by the Ministry of Natural Resources in February of 1989 and it is the first stage in the assessment of the renewal success. It is a comparison of the ideal to actual.

The Board will remember that in the case study presentation I mentioned the objectives of the unit forester were to obtain levels of basal area that would permit his objectives to be attained in the

selection management system.

What we have in this is a comparison of the actual to the ideal objective. And firstly on the right-hand columns under All Trees the actual was 67.5 square feet of basal area, the objective was 60 to 80 square feet, that was all trees.

The class A and B trees, these are the high quality trees, the objective was 40 to 60 square feet and the actual obtained was 39.1. And for all trees 10 inches and up the objective was 50 to 60 square feet of basal area and the actual was 49.2.

Now, the numbers of the actual are very slightly under the minimum objective, however, in Interrogatory No. 32 of the Forests for Tomorrow, Exhibit 1103, the timber supervisor of the Bracebridge management unit expressed his belief that this was adequate in that given a 10 per cent plus or minus they attain their objectives one hundred per cent of the time, and there has to be a slight leeway. So these are very close to the objectives.

I would like to now just show a couple of overheads that the Board has seen, but these are the comparison -- this is a comparison of the actual -- ideal forest schematic to the actual one obtained through the results of this post-cut cruise.

MS. CRONK: Q. And are these found in the case study, Mr. Murray?

MR. MURRAY: A. Excuse me, yes. These are found in the case study. The first one I will be putting on will be Figure 6, it's on page 15 of case study 4E.

Q. You are going to have to move the machine over. Oh there.

Now, you did refer the Board to this, Mr. Murray, during the evidence that you gave on the overview panel. Perhaps you could very briefly indicate how you consider it relevant to a discussion of the renewal achievements on the case study area?

A. Yes. The Board will remember what we have is a pictorial of a living forest based on the basal area 10 inches and up, this is on the vertical axis; on the horizontal axis we have years, each of these bars refers to a year in the life of the forest.

It grows, and over a 20-year period it will have added growth represented by the little black boxes, and the total amount will be 38 square feet. That is the ideal growth projection. It's one that is, I believe, to be relatively attainable and this is the objective of the forester. It will continue on for the full -- well, ad infinitum really with improvements in

quality.

Q. Is that 38 square feet per acre, per hectare, in total?

A. Excuse me, that is 38 square feet of basal area per acre.

Q. Thank you.

A. All the dimensions I am using are Imperical because that is the way I understand it and it's the way they were developed at the time.

What we have here now is again the description, using the same format, of the forest, this though is of the actual forest in the case study area, in the case study of G.W. Martin.

Q. And you are referring, Mr. Murray - I am sorry to interrupt - to Figure 9 in the case study?

A. Figure 9, yes, that's correct.

MS. CRONK: That is at page 34, Madam Chair.

MR. MURRAY: It's on page 34, yes.

This was developed for presentation to the Board by interpolating from the Ministry data that is included in the Algonquin -- Ontario Ministry of Natural Resources Marking Manual, Algonquin Region.

We used in this case the actual basal area square feet -- in square feet per acre that was

developed in the case study area, and we interpolated to get the growth in square feet per acre which is here and it says 33 feet. So we interpolated it to be that there would be in the period of the next 20 years 33 square feet of basal area on that particular stand.

This is obviously less than the objective because the stand has not -- was not at the level of the objective. The 20-year harvest would be projected, as I mentioned, by the forester and in this case they would harvest only 22 square feet to bring the forest -- the actual forest to the ideal objective of 60 square feet, and from then on it would be a matter of growing at again hopefully the 38 square feet per 20-year cycle, again on a perpetual basis.

MS. CRONK: Q. How do you relate this concept of basal area to merchantable volume?

MR. MURRAY: A. I am using the term merchantable volume of foot board measure, as I explained to the Board. This is still the terminology of lumber production, foot board measure, and this is what is used in this particular presentation.

There is a relationship, although it is an indefinite one, it's not a positive type of thing. The foot board measure to basal area of square feet is obviously there. You cut some square feet of basal

area and you take so much harvest off in board feet, there must be a relationship. It can run from as low as zero when all trees theoretically would be totally unmerchantable and would be of no use other than for firewood or pulpwood purposes; they would not be sawlog material type of, and you can run up to a maximum of very close to 80 where the conversion factor would be 80 square feet of board feet --excuse me, 80 board feet of merchantable material for each square foot of basal area.

In the case of the actual harvest on the case study it approximated about 33 square feet -- excuse me, 33 board feet per square foot of basal area. That was the actual recovery.

In this projection we have used 41 square feet -- excuse me, 41 foot board measure per square foot of basal area because there will be an improvement in the recovery due to the fact that there are better quality trees having removed some of the lower grade trees in the initial cut.

Q. Do you regard the results on this case study area as acceptable or unacceptable, Mr. Murray?

A. We regard them as acceptable. It was a very successful operation in the opinion of myself

and the people who operated at the time.

Q. Can you then finally illustrate for the Board what the current conditions are in the area?

A. I don't understand, current conditions?

Q. Do you have any photos available to show the Board--

A. Oh excuse me, yes.

Q. --to show the Board what it looks like today, what the conditions are.

A. This is slide 1.2. It's illustrating the crown closure in an uncut harvested area of tolerant hardwood maple working group. You can see that there is very little light showing through and it is because of this that maple is predominantly the advanced growth regeneration. Other species cannot exist under this heavy crown closure and maple is, therefore, the specie which will predominate.

Slide 1.3, this is an illustration - again, none of these are taken on the case study, these are all representative of it though - showing the advanced regeneration in a stand which has been fairly recently harvested.

What you see on the ground is young maple advance regeneration and it will grow very rapidly in

the opening -- the open conditions.

This is a little difficult to see see because of the lack of contrast in colour. It's an uncut stand of hardwood and this is a marked tree. You can see the yellow ring around it which will indicate it as a tree to be harvested, but it is a low grade tree, I think it is a class D tree.

The advanced regeneration is very difficult to see, but it is scattered through the hardwood stand and there are a few beech trees to be seen here in the advanced regeneration as well. These are the trees with the leaves which are quite resistant in the winter.

Q. What photo number is that, Mr. Murray?

A. Sorry, that was photo 3.5, and the last one is photo 9.2. This illustrates a young maple advanced tree which the Board has seen before.

It is showing the tremendous growth that maple will respond with when it's given the light conditions that it needs to surge ahead.

That is the total of the slides I have available.

Q. How old would that maple be, Mr. Murray?

A. That maple would -- it would be difficult to say how old it is. It could have been on the site for as many as 10 or 15 years as a very small specimen. When it's released it grows rapidly and I suspect that that is only one or two years of growth on it since the release.

Q. Thank you very much. Thank you, Mr. Murray.

And finally, Mr. Waddell and Mr. Nicks over here. If we might turn to you to deal with the last study, case study 4B dealing with E.B. Eddy Forest Products Limited.

And could I ask first whether either of you were personally involved in planning and implementing the renewal activities described in the case study?

MR. WADDELL: A. Yes, I was, Ms. Cronk.

Q. And Mr. Nicks, were you?

MR. NICKS: A. No, I was not personally involved.

Q. And with respect to yourself, Mr. Waddell, you have told us previously how long you have practiced forestry in the area of the undertaking. How long specifically have you engaged in planning and implementing renewal activities?

A. 30 odd years.

Q. All right. And, Mr. Nicks, in your case.

MR. NICKS: A. 13 years.

Q. Can we turn then to the case study itself, and would you please outline for the Board, again in general terms, exactly where the area is that you will be discussing and then proceed to outline what the conditions were on the case study area both before and immediately after harvesting?

MR. WADDELL: A. Yes. Madam Chair and Mr. Martel, I would like to remind you that this is the jack pine/aspen mixed wood upland cover type that we are dealing with now, the renewal portion of it, and the E.B. Eddy case study is located in the Upper Spanish Forest. We have three FMAs; the Upper Spanish, the Lower Spanish and the Pineland FMA, and it is located in the northern central portion of Ontario.

More specifically, I would like to refer to Exhibit 1112 which indicates the location of the Upper Spanish Forest which is the blue middle forest management agreement, locate in Sudbury, Elliott Lake, Timmins, Chapleau. The Upper Spanish Forest is -- at least the study area itself is located in the bottom west corner of the Upper Spanish Forest in this

specific area.

Q. Sorry, you are pointing to the area of, is it camp 12?

A. Yes, this is the camp 12 area, and the Upper Spanish Forest is about 2,300 square miles of productive forest land.

More specifically, the case study area itself, Exhibit 1113, consists of four study blocks. We refer again to camp 12 which you saw in the previous map, this is the main access road from Highway 17 running through to Ramsey and out to 144.

The case study area itself is this general area in here. The actual case study consists of four specific blocks, blocks A, B, C and D, consists of approximately 28 hectares in size, and I would like to refer to an overhead -- or, pardon me, a slide at this time. If we can have the lights, please.

This is an overview taken of the case study area in 1989 which is eight years following the cut-over. This is the secondary road that you see on the map to the east side running from south to north and the case study -- or the block A is located on the west side of the road, in this vicinity.

Q. You are pointing to the north of the photograph, Mr. Waddell?

A. Yes, I am. On the east side of the road and slightly to the south is block B located in proximity to this small pond. To put this in perspective, this is only four hectares in size, that pond.

Block C is in this vicinity, and block D is located further south and again on the east side of the road.

Q. I am sorry, you said this vicinity. Block C is in the vicinity of the pond?

A. Block C is in the vicinity of the pond, it borders right on the pond, and on the east side -- south and east side of the pothole.

Q. So that we can find it later, Mr. Waddell, what photograph or slide number is that, please?

A. That is slide No. 2.2.

Q. And can you describe for the Board, if you would please, Mr. Waddell, what type of species were found on these blocks before harvesting?

A. Yes. The four blocks consisted of parts of eight different stands and the stands themselves consisted of all or part of the jack pine/aspen mixed wood upland cover type, but they were either in the poplar or aspen working group or jack

pine, different components of each, and it depended upon the percentage of jack pine or aspen as to which was the dominant working group.

The stands were about 70 years of age and they had originated from a wild fire that went through the area about 1910. So they were essentially an even-aged fire origin stands.

Sorry, I would like to show you slide 2.3. What you see in the background is what many of these stands looked like prior to harvesting. This is not on the case study block itself, however, it is only about a half mile from it, and what you see in the background is an area of concern that was left around what happened to be Kirby Lake.

This is about a 70 to 75-year-old typical jack pine/aspen mixed wood upland cover type. You can see the component of jack pine that is in it and the component of aspen. In the foreground of course you see the area that has been logged and the type of jack pine tree-length material that has been extracted from the area.

These stands are typically some of our better stands on the Upper Spanish Forest management agreement area and they are capable of producing high yielding volumes of both jack pine and aspen.

This is a soil pit that was dug on block A and it's simply to show you the type of soil that exists on the area. It's a loamy sand and is very deep and it is capable of producing good stands of jack pine. The poplar -- it's a little bit dry for the poplar, so the poplar is not as high quality as is the jack pine.

Q. And what photo number is that, Mr. Waddell?

A. Sorry, it's photo 2.4.

Q. Thank you.

A. I would like to point out that in our harvesting activities in this area we harvested only the softwood. The aspen and white birch was not harvested due to the fact that the only market for the aspen was at Espanola and in 1980 only 25,000 cunits was used in that mill, our pulp mill, and it was possible to obtain that volume from a much closer source than the Upper Spanish Forest agreement area.

This again is not on the case study block, but it is very typical of what these areas looked like following the harvest. As you can see the softwood has been extracted and the aspen and birch remain, and this is an area that we would then have to decide how we were going to obtain renewal on and this

is slide No. 6.5.

Could I have the lights now, please.

MR. MARTEL: 6.3 or 6.5?

MR. WADDELL: Sorry, my eyes are failing me, Mr. Martel, it's 6.3. Thank you.

MS. CRONK: Q. Could you outline for the Board then, please, Mr. Waddell, what the actual renewal options were on the four case study blocks forming part of this case study?

MR. WADDELL: A. Yes. As I previously mentioned, in the jack pine aspen mixed wood cover type the stands are either in the poplar or the jack pine working group and depending upon which working group they are you have several options according to your silvicultural prescriptions.

And I would ask the Board if they would turn at this time please to case study 4B, Appendix 1, page 43, and what I am referring to is Table 1 which is the silvicultural specification and regeneration standards.

Now, looking first at the areas that we determined from the FRI inventory were jack pine working group, we go to the specifics -- or the table on page 1, the left side you will see the jack pine working group, Inventory Jack Pine Working Group,

moving across to the right you will see there are two categories under Site Description, the first says All Site Classes, Richer Sites with Sandy Loam and Sandy Clay, immediately below that All Site Classes, Poorer Sites with Sand and Loamy Sand.

From our knowledge of the area we knew that the soil fell more into the loamy sand category, so this then directed us as to what types of options we could use.

If you will move across to the right from that column you will see the method of harvest was clearcut and the proposed working group was jack pine. You will see the silvicultural prescription options that were available to us listed in the column under Silvicultural Prescriptions.

The first of these was site prepare and seed, then site prepare and plant, seeding with site prep, site prep for natural regen. We evaluated the pros and cons of each of the available options to us and selected option No. 2 which was the site prepare and plant.

This was and still is E.B. Eddy's preferred option on upland mixed wood sites that have more than 10 per cent aspen in the cover type and which have more than 10 per cent silt or clay in the content.

The reasons that the other prescriptions were rejected, if you will look at No. 1 is site prepare and seed, we felt that the potential for poplar to rebound on this site was just too high and that seeding would have little chance of working its way through the rapidly rebounding aspen, so we rejected this.

No. 3 option was seeding with site preparation, simultaneously with the site preparation. This isn't -- at that time at least had not proven to be a technique that had been overly successful in northeastern Ontario for a number of reasons and we rejected this option as well.

Q. Stopping there for a moment, Mr. Waddell, we heard last week in evidence from Mr. Ferguson that that type of an option, simultaneous seeding with site preparation is what was employed by Canadian Pacific on their case study area.

How far is the Canadian Pacific case study area from E.B. Eddy's that you are describing?

A. I would say somewhere in the 800 to 900 miles to the west of our case study area.

Q. Are the conditions the same on the two areas?

A. When you say the conditions, do you

mean are the study blocks themselves?

Q. I am sorry, yes, on your case study area compared to what you heard Mr. Ferguson describe about his case study area?

A. I would think generally speaking that his case study blocks were drier, sandier and therefore drier than what our particular case study was because they were not concerned about the possibility of hardwood vegetation coming in after the silvicultural technique was carried out. That wasn't a concern of Mr. Ferguson and, therefore, he was able to carry out seeding on his particular project; whereas we felt that because our site was possibly more productive and fresher that the rebounding hardwood would be a real problem to us, therefore, we did not choose to seed.

Q. And dealing with the fourth option, site preparation for natural regeneration?

A. Yes. This is an option, however in northeastern Ontario over the years site preparation for natural regeneration has not been very successful and basically it has been abandoned as a technique. So that covers the options that we had for the jack pine working group.

As I mentioned, we also in this area had stands that were in the poplar working group, and I

would ask the Board now, if you would turn please, to page 3 of our silvicultural table.

You will see in the upper left-hand corner the inventory working group is poplar. Site Description, all sites, Method of Harvesting, clearcut, Proposed Working Group. You will see that we had the option to try for three different types of working group here in the new crop, we could either go for poplar or jack pine or spruce.

Let me speak briefly to each one of these. We rejected the option to go to poplar for the reasons that this is not a preferred species for our mill at Espanola. I should probably restate that, it is used in our mills, however, the capacity at that time, as I previously mentioned, was only 25,000 cunits a year and this was easily supplied from small independent operators operating on small Crown management units or on private lands in the general Espanola/Thessalon north shore area.

They were able to put that wood into our mill from a much closer distance than what the case study area was, and we also felt that even if our mill at Espanola was able to consume more poplar in the future - which incidentally we are today, our 1988 consumption was slightly over 100,000 cunits, which is

a fourfold increase, certainly moving in the right direction - but we also felt that because of the huge unused surplus existing in that part of northeastern Ontario - and it existed not only on our forest management agreement areas but it exists on private lands and it exists on Crown management units - we felt that regardless of what future markets we might be able to provide for poplar pulpwood at Espanola, we felt there there would be ample wood there in the future and, therefore, we should not deliberatelly try to create more poplar working group on our FMA than what already existed. Therefore, we rejected that option.

We rejected the option to convert to spruce because the site was basically a bit too dry to get your best growth from spruce and also, while we do use spruce it is not our preferred softwood species because most -- not most, all of our softwood goes directly to our sawmill at Nairn and our market is better for jack pine than it is for spruce lumber.

Therefore, our decision was clearly to convert the poplar working group wherever possible to the jack pine working group. This is or was and still is our preferred softwood species.

Q. Mr. Waddell, I am going to ask you in a moment to outline how the renewal activities in light

of these options -- the chosen options were in fact implemented.

MS. CRONK: I note the time, Madam Chair. When did the Board wish to rise?

MADAM CHAIR: Is it convenient now to have a morning break, Ms. Cronk?

MS. CRONK: Yes, it is.

MADAM CHAIR: All right, thank you. We will be back in 20 minutes.

---Recess taken at 10:10 a.m.

---On resuming at 10:30 a.m.

MADAM CHAIR: Please be seated.

---Discussion off the record

MADAM CHAIR: Okay, we are ready.

MS. CRONK: Thank you.

Q. Mr. Waddell, still dealing with your case study, in light of the options that were selected that you described to the Board both for the jack pine working group and the poplar working group, could you outline for the Board, please, how the renewal program was implemented; what was actually done?

MR. WADDELL: A. Yes, Ms. Cronk. Before I do that, I would just like to go back for a moment and try to put in perspective again.

I indicated that we did not attempt to

regenerate back to poplar for the reasons and I would like at this time to show you a slide of a typical stand in that situation. Could I have the lights, please.

This is slide No. 7.1. This again is not on the case study block, but it is typical of the type of stand from which we did harvest whatever softwood was available, and because of the number of stems, the high number of stems of aspen, we did not attempt to convert that back to jack pine but left it to regenerate naturally back to poplar.

So I think it's important that the Board understand that we do not just go out and try to convert every mixed wood stand to jack pine, we certainly pick and choose the specific stands that we wish to do this on, and a stand with a high residual content of poplar like this one, we leave that to regenerate back to poplar.

The first step in a renewal program -- in the implementation of the renewal program is the site preparation, and in these particular areas - okay, thank you. I am going to use it again in a second anyway - in these particular areas we did two distinct and separate forms of site preparation. Blocks A and B were treated in one manner; C and D were treated in

another manner.

A and B were an experimental approach to a new management technique that we started for the first time in this area and that was, we felt that we wanted to completely remove all the residual poplar from the cut-over area and then follow up with our planting. To this time -- or at that time, I should say, to that date the typical method of management of these stands had been to site prepare in and around the residual poplar and not knock them over and then plant in partial shade, if you will. We felt that we would like to experiment with something and blocks A and B were our approach to this. If I could have the lights again and the slides, please.

This is an aerial view of windrowed aspen, and again this is not on the case study block, it's located approximately 30 miles to the north and about five years later, but it is very typical of what we did on the case study block.

You can see in the middle of the slide the windrows, the parallel windrows of poplar. You can see in the bottom of the slide standing spruce and, in the background, the uncut timber is stands of aspen from which we may or may not have removed the softwood, but those stands are being allowed to regenerate back

naturally to poplar. There was just too much poplar in them for us to even think about converting them to jack pine. So you can see in that slide the configuration that occurs on most of these areas where we go in and completely remove the overstorey aspen, windrow it and then go from there with the planting.

This is slide No. 7.3. Now, following this, the windrowing in blocks A and B, we then carried out site preparation using bulldozers and Young's teeth. Those three teeth you see sticking in the front of the blade there are what are known in the trade as Young's teeth.

The purpose of this type of site preparation is to disturb the upper duff layer and do a mixing with the mineral soil to prepare an appropriate seedbed for either planting or seeding, in this case it was planting. So, first of all, you had the bulldozers pushing over the residual poplar and then windrowing them and then followed by Young's teeth. That is what was done on blocks A and B.

C and D - you can turn the slides off now, please -- block C and D were typical of the old style of site preparation in which our bulldozers went in and scarified -- or site prepared, I should say, in and around the residual poplar and thus there was a

partial canopy remaining on the area following the site preparation, and planting was done in that partial shade.

Q. When was the site preparation actually carried out?

A. The site preparation was carried out in 1981.

Q. And just comparing then the treatments that you have described on blocks C and D as opposed to A and B, why was the poplar or the aspen removed on blocks A and B as distinct from C and D?

A. Yes. C and D, as I mentioned, was typical of the way in which this cover type had been managed up to this particular date, by partial removal only of the canopy. We felt that there had to be a better way to manage that particular cover type than what had been done in the past, and this was our first experiment at it. We simply weren't satisfied with the results that we were getting in terms of tree growth. So we got into this experimental type of site preparation in 1981.

There were certain benefits that we anticipated that we would obtain from these new type of management practises, and those benefits that we thought we would get from this complete removal of the

aspen overstorey were, first of all, we would be able to increase the number of plantable microsites because of a more thorough site preparation, and by increasing the number of microsites to plant, of course, we would be able to plant a higher number of trees per hectare.

We also felt that we would be able to obtain a higher rate of growth and, therefore, a shorter rotation period because we were reducing the amount of shade that the jack pine were growing in and we were also reducing the amount of competition that would be provided to the jack pine.

Another benefit we felt we would derive was we would improve the planter access; in other words, by this complete site preparation practice it made it much easier for the tree planter to walk on these areas, therefore, we anticipated getting a better tree planting production rate and this would result in lower planting costs.

Finally, we felt that we would be able to carry out a more effective aerial herbicide release spray program since the spray would not be intercepted by the residual mature poplar; in other words, it would get right down on to the ground where it was needed to kill the younger competing aspen and so forth that was rebounding after the harvest cut.

Q. Now -- I am sorry.

A. I was just going to say that that completes our site preparation component.

Q. All right. Dealing with the regeneration aspects of it, as I understand, planting occurred following the various site preparation treatments that you have outlined?

A. Yes, it did. And I am going to ask my colleague, Mr. Nicks, from E.B. Eddy to describe the planting techniques that the company carried out.

MR. NICKS: A. Madam Chair, Mr. Martel, the second step in implementing the forest renewal program was to carry out the planting component. This was done in May of 1982 using regular E.B. Eddy employees commuting daily from camp 12 which you will recall from Exhibit 1113 is only a short distance from the case study area.

A graduate forester supervised the tree plant. He was assisted by a quality control forester and three foremen. Each foreman supervised an eight to 10-man planting crew and was ultimately responsible for tree planting quality.

I would like to present a slide. This is a slide of photo 7.4 from our case study. This is an actual slide taken during the planting of block B which

was one of the intensively site prepared blocks described by Mr. Waddell.

You can see the planters with the orange hard hats busily planting, in this case jack pine container stock. The planting stock we used was a combination of two-year-old bareroot stock from MNR nursery and over winter container stock from private grower. Both stock lots were received and planted in good condition. Incidentally, 95 per cent of the planting stock now utilized by E.B. Eddy is containerized due to the ease of handling and storage and its resistance to drought stress.

One of our observations was that 23 per cent higher planting densities were achieved in blocks A and B as opposed to blocks C and D due to the physical removal of the aspen, which Mr. Waddell described, and more complete site preparation.

Q. What do you mean, Mr. Nicks, by more complete site preparation?

A. What I mean is that the residual aspen which would normally interfere with the regular spacing of trees was removed and piled into windrows allowing the planters to plant as close as possible to a 2-metre spacing which would be considered to be optimal for jack pine.

Q. And why in particular was planting preferred over seeding, for example?

A. Our preference for planting over seeding is a result of the comparatively high soil productivity certainly for jack pine which Mr. Waddell has discussed, and this justifies the additional cost of planting in that it obtains immediate restocking and regulated spacing.

And the second reason for our preference of planting over seeding was that, as Mr. Waddell has described, the competition potential from aspen would have quickly smothered the jack pine germinating from seed and we knew from experience in other areas this was indeed a fact.

Q. Were all four blocks planted?

A. Yes, all four blocks were planted.

Q. And can you assist the Board as to the results available to date concerning the state of regeneration on these blocks?

A. Yes, I can.

There were three types of assessments done on the case study area to determine the treatment effectiveness.

The first -- perhaps I will leave the slide on if people can hear me. The first type of

assessment was a regular stocking assessment. These were performed in the first year after the year of planting, which would have been in September of 1983; a post-spray assessment which was conducted in the third year after the year of planting was conducted in September of 1985; and the regular fifth-year stocking assessments required under the FMA agreement were performed in August of 1987 in the fifth year after the year of planting.

Q. Mr. Nicks, if we are going to leave the projector on for a moment, could you use your microphone so people can hear you. We are having somewhat of a difficulty. Thank you.

A. Okay. The second type of assessment that was done were regular, or at least at that time regular survival plot assessments. Two 25-tree plots were established in block A and one 25-tree plot was established in each of blocks C and D at the time of planting. These have been assessed a total of 11 times each since the year of planting in 1982. This very high intensity relates to the experimental nature of the area to determine exactly what was happening.

And the third type of assessment that was undertaken was the stem volume assessment which is reported on in the case study, and this came about

through a supplementary stocking density and stem volume survey performed in blocks A to D inclusive in November of 1988.

The purpose of the stem volume assessment was to determine the relative growth rates in terms of fiber, which is ultimately what goes into our mills.

Q. What is a stem volume assessment?

A. A stem volume assessment is an estimation of the woody biomass on the stem of the tree which is determined through measurement of a representative sample of trees on the area. The measurements taken are total height and diameter, outside bark, at one third of total height, and those are integrated through a volumetric formula or a paraconical solid to estimate the volume of woody material. We feel this is a good indicator of what the past growth and future growth rate of the trees will be.

Q. Well, could you deal first with the fifth-year stocking assessment and outline for the Board, if you would please, what the results from that assessment are to date?

A. This is a slide of Table 2 found on page 26 of the case study. It's simply been converted into a graph form and, as the title indicates, it's a

summary of fifth-year stocking assessment by case study block.

The blocks A through D are of course indicated in the various colours. It's noteable that blocks A and B had the aspen removed, C and D the aspen canopy was left in tact.

Softwood stocking scale is given on the vertical axis and the actual measurements taken during the official company survey measurements of stocking are superimposed over the columns. So we see a stocking in block A, for example, was estimated at 72 per cent; block B at 81 per cent; and block C and D at 55 per cent. Overall this is the result of an operational survey.

Q. And when was that survey conducted?

A. The fifth-year survey was conducted in August of 1987.

Q. And is that the survey contemplated under the E. B. Eddy's relative FMA agreements?

A. That's correct, yes.

The stocking levels in blocks A and B are higher in our opinion than in blocks C and D because of the increased plantable area which resulted from the windrowing of the aspen, as well as the possibility of higher survival because of a lack of suppression by the

aspen.

Q. And can you outline for the Board what the results of the fifth-year survival assessment were?

A. Yes. The fifth-year survival results were recorded as follows: In block A the average was 92 per cent survival; in block C was 96 per cent survival; and in block D, 88 per cent survival. These figures are documented on page 29 of case study 4B. Survival was high in all cases as a result of good seedling quality and careful tree planting.

The inconsistent correlation you will notice between fifth-year survival and fifth-year stocking within individual blocks clearly illustrates the weakness of seedling survival as a direct indicator of plantation stocking and eventual yield.

And I would like to draw the Board's attention to our response to Forests for Tomorrow Interrogatory No.30 at this time.

Q. Give me just a moment, Mr. Nicks.

MS. CRONK: Madam Chair, that interrogatory formed part of Exhibit 1138 filed last week at the beginning of this panel's evidence. Perhaps for the assistance of the Board if I could provide you with another copy of it. (handed)

MADAM CHAIR: Thank you, Ms. Cronk. We don't seem to have it.

MS. CRONK: Q. Mr. Nicks, could you outline, please, the nature of the enquiry received and as well the nature of the response provided?

MR. NICKS: A. Yes. The question posed to the OFIA/OLMA was:

"Do second-year survival statistics give a relative indication of what the future stocking will be?"

Our response was that:

"Second-year survival statistics do not necessarily give a relative indication of the what the future stocking of the plantation will be and this is simply because survival statistics ignore the spacial distribution of trees both planted and natural which is the essence of stocking."

The Board will recall Mr. Squires' discussion of stocking last week in Thunder Bay. And as an example, which I hope will illustrate, a corridor of mixed wood site planted to 1,250 uniformly spaced trees per hectare and having 95 per cent survival uniformly distributed after two years would be 45 per

cent stocked according to the four-square metre quadrat stocking concept; on the other hand, a patch scarified sandflat which would be planted in some cases to 2,500 uniformly spaced trees per hectare and having 90 per cent survival after two years would be 90 per cent stocked on the same basis.

So both sites have the same survival rate though the stocking on the second site is twice that of the first area, and this is a result of higher planting densities.

So that to say that survival gives a direct and accurate and reliable case of of stockming is unfortunately erroneous.

MS. CRONK: I wonder, Madam Chair, if I might retrieve that copy of the interrogatory?

MADAM CHAIR: Thank you, Ms. Cronk.

(handed)

MS. CRONK: Thank you.

Q. And dealing with the third form of assessment that you indicated was carried out on the case study blocks, Mr. Nicks, the stem volume assessments, could you outline for the Board what was involved with those and what the results were, please?

MR. NICKS: A. Yes. The stem volume assessments, as I indicated, were undertaken to

determine the comparative yield potential offered by each of the two silvicultural treatments; namely, aspen removal and aspen retention. Stem volume is strongly influenced by changes in stem diameter which is in turn affected by the amount of live crown on a seedling or tree.

Now, since the amount of live crown depends on the level of competition experienced by a shade intolerant species such as jack pine, it therefore follows that stem diameter and therefore volume will strongly reflect the effects of competing vegetation such as overhead aspen.

And I will demonstrate those effects in a while through some graphs and through some exhibits.

The dramatic relationship between aspen competition levels and jack pine growth rates are depicted in the following series of four photographs taken within the case study blocks in September, 1988. Immediately following each photograph will be a graph indicating the estimated average jack pine stem volume in that particular block as of November, 1988.

Q. What photo number is this, Mr. Nicks?

A. This is a slide of photo 9.1 from Appendix 4 of case study 4B. This slide was taken in block C of the case study area. It indicates a badly

suppressed jack pine seedling of average size eight growing seasons after planting. The aspen canopy was left in tact after harvesting with no aerial herbicide application due to the adjacent water body which Mr. Waddell pointed out in the overview slide of the case study.

Q. And, I am sorry, what block is that?

A. This is block C of the case study area. The only treatment by way of site preparation was what we used to call the dip and dive site preparation method.

This slide indicates the stem volume -- average stem volume of planted jack pine as assessed in November of 1988 as indicated by the magenta I believe coloured block. The stem volume in cubic decimetres was .31 cubic decimetres in November of 1988. To be helpful to the Board, a cubic decimetre is about the size of a pound of butter. So this was the lowest volume reported in any of the four blocks.

Q. If I can stop there for a moment.

MS. CRONK: Madam Chair, this slide forms part of Exhibit 1143B that was filed this morning, four stem volume photographs that were provided to the Board.

MADAM CHAIR: Thank you.

MR. NICKS: This slide is a slide of photo 9.2 from Appendix 4, case study 4B. It was taken in block D of the case study area. It indicates a suppressed jack pine tree of average size eight growing seasons after planting, again, the same elapsed time as in block C. However, it's recent performance has been better than that of trees in block C because the aspen overstorey has been partially removed by aerial applications of 2,4-D. However, there is still a lingering aspen canopy, as the Board will observe, and a tendency for aspen to resprout.

This is a slide indicating the average stem volume of block D estimated at .71 cubic decimetres, more than twice that of unsprayed block C. So there has been some benefit to partially releasing the aspen canopy.

This is a slide of photo 9.3 from Appendix 4 of the case study, was taken in block A, the same time as the preceding photographs within literally an hour.

It indicates a healthy vigorous jack pine seedling of average size for this block. It has never experienced prolonged competition from aspen since the original aspen overstorey was removed prior to planting and because two aerial herbicide release sprays have

been conducted.

(Thank you very much)

This is a slide of photo 9.3 from Appendix 4. This was taken in block -- I am sorry, I think we are missing something. Okay, yeah.

This is a shot of the average stem volume in block A or at least a graphical representation of it. At 1.05 cubic decimetres this is more than three times the average volume of trees in unsprayed block C.

And this is a slide of photo 9.4 from Appendix 4. This slide was taken in block B of the case study area. Jack pine growth in this block has been exceptional due to the provision of continuous full sunlight through aspen canopy removal and effective aerial herbicide tending. Mr. MacKay whom the Board may recall is approximately six feet in height.

And this is a slide indicating the stem volume average trees in block B which you just observed a slide of. The average stem volume in block B was estimated at 1.73 cubic decimetres, more than 5.5 times the average stem volume observed in non-windrowed and unsprayed block C.

MS. CRONK: All of the stem volume slides, Madam Chair, are part of that same exhibit that

was filed this morning.

Q. Overall then, looking at the results measured by this assessment, Mr. Nicks, what conclusions do you draw? What do they indicate to you?

MR. NICKS: A. Well, to perhaps answer that a little better if we can look at a slide of Table 3 of the case study area in which the estimates of volume per tree were integrated with density reported on the plot to give an estimate of the total jack pine volume per hectare after eight years by case study block.

And here we see that the -- if I could perhaps have the projector adjusted, yes. The total volume per hectare of jack pine of woody stem biomass standing on the block A is 3.06 cubic metres per hectare, 4.14 for block B, which you will recall had heavy site preparation as well, only .73 cubic metres for block C, and .94 for block D.

So the trend in stem volume is carried forward when one integrates volume with density to work up a per hectare figure.

Our assumption at this time is that the stem volume difference will continue to exist as long as the aspen overstorey remains in tact, which it shows every sign of doing, particularly in the unsprayed

blocks.

Now, since stem volume translates into future yield of lumber and pulp, E.B. Eddy very much prefers the results obtained in windrowed and sprayed blocks A and B.

Q. What is the significance to the company of stem volume assessments in practical terms; how does it assist?

A. Well, as I indicated, stem volume is ultimately what we harvest and utilize in our pulp mill and that stem volume growth tends to be cumulative, it's related to the cambial surface area which is obviously larger with a larger tree. So we feel there is a correlation between stem volume production at the juvenile stage and projected stem volume throughout the rotation, other things being equal.

In other words, if the aspen canopy continues to persist, we believe the growth patterns -- supressed growth pattern will continue; whereas in the open the rapid expansion of volume growth will continue as well.

Q. And stepping back, if you would, Mr. Nicks, and considering the fifth-year stocking assessment results, the fifth-year survival assessment results and the stem volume assessment results in these

four blocks, what observations would you offer the Board with respect to the techniques employed on blocks A and B as compared to C and D?

A. Well, I would summarize it in three ways. The aspen canopy removal, Madam Chair, Mr. Martel, has provided the following benefits:

First, there has been a high initial planting density and stocking; the second benefit has been effective aerial spray applications to protect the tree planting investment since the canopy is not there to interfere with it, with the application of the herbicide; and the third benefit has been a dramatically increased softwood growth rate through the provision of full sunlight.

And now, with the Board's permission, I would like to bring forth a couple of exhibits. They may be classed as one exhibit.

MADAM CHAIR: Mr. Nicks, a question about: Were you able to separate out the impacts of canopy removal of poplar versus the effects of spraying?

MR. NICKS: No, that would be difficult because that particular treatment combination was not applied. It would have required canopy removal and no spray in that block, and that was not the case.

MS. CRONK: Q. Just to assist in that regard, on which of these blocks did no herbicide tending occur?

MR. NICKS: A. Block C.

Q. And was there canopy removal on block C?

A. No, there was not.

Q. At my request, Mr. Nicks, did you make an effort to obtain a recent photograph to compare the trees on blocks B and C?

A. Yes, we obtained a recent photograph. Our operations forester for the camp 12 area obtained two representative trees with the same volume relationships as the trees reported in our data last Friday and he shipped those to Espanola, and we have prints of those trees as well as sections of the stem for the Board to see, if they wish.

Q. All right. Dealing first then with the photographs, Mr. Nicks. I am showing you a photograph with two individuals in it and two trees. Is that the photograph that was taken last Friday?

A. That's correct.

Q. Thank you.

MS. CRONK: Could I tender that as the next exhibit, Madam Chair.

MADAM CHAIR: That is Exhibit 1149.

---EXHIBIT NO. 1149: Photograph depicting an average tree from block B and C.

MR. FREIDIN: What is it a photo of, so we can mark it?

MS. CRONK: Q. Can you describe the photo please, Mr. Nicks?

MR. NICKS: A. It's a photo of an average tree as determined by our operations forester based on information provided to him as to what the specifications of average trees were in each block, an average tree taken from block B, which I believe is on the left, and the average tree from block C which is on the right.

Q. It would be nice if I gave you a copy of it. (handed) Sorry.

Could you with it in front of you please indicate to the Board then what it's depicting?

A. Well, it's depicting the effects of suppression, particularly in the right-hand tree. You will note that there is not a major difference or as large a difference in height as there is in volume or in crown width and that is consistent with the physiology of the tree growth.

A tree when it's suppressed channels its

photosynthate by the process of photosynthesis into height growth so that it can attempt to outgrow the competition. So it's hardly surprising that the heights are not radically different; however, what is radically different is the amount of live crown as determined by the crown width. And, as I indicated to the Board, the amount of live crown directly impacts radial growth which is proportional to volume growth.

Q. And the tree on the left, as I understood what you said, is from block B and the tree on the right is from block C?

A. That's correct.

Q. Were they both removed at the same time?

A. At practically the same time, give or take a few minutes.

Q. Is the tree shown from block B typical or atypical of the trees grown on that block?

A. It's typical.

Q. What instructions in that regard where provided by you and Mr. Waddell to the individuals who removed these trees, what kind of trees were they to look for?

A. They were to look for a tree of average height and also at that time they were advised

by one of our management foresters in Espanola what the average dimensions of those trees should be or were, so that the relationship between volume that we observed in '88 would be the same as the relationship in stem volume of these two trees. So they are representative.

Q. Was the tree shown from block B the largest tree on that block?

A. No, it was not.

Q. And similarly, was the tree shown from block C the smallest or the narrowest, if I can put it that way, on that block?

A. No, it was not.

Q. And you indicated that you have sections of these trees with you today; is that correct?

A. That's correct.

Q. All right.

MS. CRONK: With your permission, Madam Chair, Mr. Martel, I would ask Mr. Nicks to show you those portions and to offer you the comments and observations in a comparative sense regarding what is evident from the treatments on these two blocks, with your permission.

MADAM CHAIR: Please proceed, Mr. Nicks.

MS. CRONK: Thank you.

Q. Perhaps while you are doing this, gentlemen, I could ask for the record: When were these tree specimens obtained?

MR. NICKS: Friday last, which I believe was the 4th.

MS. CRONK: Q. And from which blocks?

A. This tree was obtained from block C and the other tree, which I will present for the Board, was from block B.

MS. CRONK: This, Madam Chair, may be a little bit cumbersome in the current setting of the room. I don't know if the Board members can see, but for the record, Mr. Nicks and Mr. Waddell are laying out the segments of the trees from blocks B and C on the floor. Can you see from there, Madam Chair?

MADAM CHAIR: Yes, we can, Ms. Cronk.

MS. CRONK: Q. Are these segments of these trees from the actual trees in the photograph shown in Exhibit 1149, Mr. Waddell?

MR. WADDELL: A. I am sorry, would you repeat, Ms. Cronk?

Q. Yes. Are the segments that you are demonstrating to the Board on the floor currently right now, are they from the same trees shown in Exhibit 1149?

A. Yes, they are. We removed the limbs from them on Sunday and brought them down on the plane.

Q. All right.

A. We had hoped to bring the tree in its entirety, but I didn't think we could get it into the elevator here.

Q. Would that have something to do with Ms. Cronk suggesting that maybe we should move to Toronto this week. Never mind, you don't have to answer that, Mr. Waddell.

Mr. Nicks, looking at what you have laid out on the floor, and in fairness to my friends, if they wish to rise to see it, which tree segment is on the Board's left?

MR. NICKS: A. The tree from block B.

Q. And therefore on the right...?

A. The tree in block C.

Q. All right. And what observations would you offer to the Board with respect to these two tree segments?

A. Well, the measurements that we recorded for the tree in block B, the larger of the two, were 376.5 centimetres total height above the root collar.

Q. I am sorry, what was the figure

again?

A. 376.5 cubic centimetres -- I'm sorry, centimetres, I'm getting ahead of myself.

Q. Above the root collar?

A. That's right.

Q. What do you mean by that?

A. That's the distance from the root collar, which is the point of departure of the stem, and the roots, it's normally where the soil line appears in the tree. And the top of the tree is taken to the base of the terminal bud, which is the termination of the stem of the tree.

Q. And how does that compare to the tree taken from block C?

A. Block C, the total height is 276.5 centimetres.

Q. And again, is that above the root collar?

A. Again, the same.

Q. And can you make any observations or offer any opinion to the Board as to the relative diameter of the two tree segments?

A. Yes. The diameter measured at one third of total height, which is the same point along the stem used to measure the trees for the purposes of

the case study data, the diameter at one third height, which would be approximately right here in each case. (indicating)

Q. I am sorry, when you say right here, you're referring...?

A. Would be one third of the way up the stem above the root collar.

Q. Thank you.

A. The diameter of the tree from block B is 4.6 centimetres.

MR. MARTEL: Would you repeat that, please?

MR. NICKS: 4.6 centimetres.

MR. MARTEL: Thank you.

MR. NICKS: And the diameter of the tree from block C is 2.47 centimetres.

MS. CRONK: Q. And I am sorry, how far up from the root collar did you measure that?

MR. NICKS: A. Again, at one third of the total height.

Q. And why did you measure it at that particular point?

A. Because that's the accepted point for measuring trees in terms of applying the formula which is in the case study, the Forslund equation for the

paraconical solid. It's somewhat erronious to measure it at the base, for example, because of the obvious flare and it's more accurate to measure it at one third point which is the centre of gravity of the tree approximately.

Q. And with respect to the volume of these two tree segments?

A. The volume of the tree from block B is 4.25 cubic decimetres, the equivalent of about four pounds of butter as I attempted to state by way of analogy, and the volume of the tree from block C was 0.85 cubic decimetres.

So the relationship between the volumes of blocks B and C, the trees from those stands, is five times; in other words, the volume of the tree from block B has five times the volume of woody biomass in the stem as that of the average tree from block C which is very close to the relationship observed in 1988.

Of course the average size of the trees has increased because of the extra growing season.

Q. Why do these tree segments not have any branches as depicted in Exhibit 1149?

A. They were simply removed for the purposes of transportation, and also because the point we are essentially trying to make is the stem volumes

are improved by the provision of full sunlight to jack pine.

Q. Thank you.

MS. CRONK: Madam Chair, I would like to propose that the segments from the tree from block B be put in one green bag and marked as an exhibit and the segments from the tree from block C be put in a separate bag and tagged with a separate exhibit number.

If that's satisfactory, could I ask for an exhibit number for the block B tree segments?

MADAM CHAIR: Yes. The block B tree segments will be Exhibit 1150 and the block C tree segments will be Exhibit 1151.

---EXHIBIT NO. 1150: Green bag containing actual segments of tree from block B.

---EXHIBIT NO. 1151: Green bag containing actual segments of tree from block C.

MS. CRONK: Q. Are there any other observations or comments that you wish to make concerning these segments, Mr. Nicks, before I ask you and Mr. Waddell to remove them?

MR. NICKS: A. Just for the Board's information, I would like to indicate to them a cross-section of the tree taken at about two and a half feet up in each case for them to observe the relative difference in the width of the annual growth rings,

bearing in mind these trees are of the same age.

Q. Can you describe in words, as you regard appropriate, Mr. Nicks, what you are pointing out and you are demonstrating to the Board?

A. What I am demonstrating to the Board is the cross-sectional or basal area of these two trees which is very consistent with the volumetric relationship which is approximately 5:1; the tree from block B being five times the volume of the tree from block C.

Q. Do you have a magic marker there, Mr. Nicks, a felt pen of any kind? I am sorry, I have got one right here.

Could you just mark, again for future reference, on the cross-section which block these two segments are from.

A. The cross-section here?

Q. Yes, thank you. Thank you very much, Mr. Nicks and Mr. Waddell.

You have described in some detail, Mr. Waddell, when you first appeared before the Board on the case study overview panel and again this morning, and Mr. Nicks again in the evidence that you have just given over the last half hour or so, the various treatments that were utilized by E.B. Eddy on these

case study blocks.

Looking at Exhibits 1150 and 1151 before the Board now, who -- perhaps I could ask you first, Mr. Nicks. What, in your own view, is the comparative advantage of the treatments that you have described? What would you have the Board take from all of this?

MR. NICKS: A. From my perspective it gives a relative indication of the return on the silvicultural investment that one could expect.

As an investor in forest management, either a member of the public or a member of the Industry, I would submit should be far more satisfied with the 500 per cent greater -- or excuse me, 400 per cent greater, actually, growth rate observed in the average tree from block B than from block C. This is the principal message that I am attempting to convey.

Q. Mr. Waddell, do you agree or disagree, or is there anything you wish to add to that?

MR. WADDELL: A. Well, I certainly support what Mr. Nicks has said. In addition, what I would like to leave with the Board is repeating what I said to you in my concluding remarks in Thunder Bay, that I feel that foresters must have the flexibility to make the management decisions that they are qualified to make and those decisions are made on a site-specific

basis and, in this case, our foresters made the decision to alter a prescription that had been going on for a few years and they changed it to try to develop a better technique and I believe it's fairly obvious that we were successful.

And I think that this is an example of how foresters look at the site on a site-specific basis, put their professional knowledge, experience and expertise to it and come up with a prescription that is the best that is available to try to carry out an adequate and proper renewal of our forests.

That is the message I would like to leave with you, Madam Chair, Mr. Martel.

Q. Thank you, Mr. Waddell. Mr. Nicks, has all that you have described with respect to this case study and what Mr. Waddell has described led to any change in the practices of E.B. Eddy with respect to renewal on its FMA areas?

MR. NICKS: A. Yes, it has. The success which we achieved on the case study area has led to expansion of heavy site preparation to clear residual aspen on much larger areas in the case study itself.

For example, 79.7 hectares were treated the following year, which was 1983. That area now has a softwood stocking of 62.4 per cent and an expected

softwood volume at maturity of 227 cubic metres per hectare plus associated aspen. This yield would exceed the current softwood yield from mixed woods, which is about 76 cubic metres per hectare in our case by over 200 per cent.

The level of heavy site preparation was 1,700 hectares on our FMAs by 1988, or about 40 per cent of the total site preparation program, which I could illustrate by way of a slide if I might.

This is a slide of Figure 8 in the case study. This is a slide depicting the relationship of heavy site preparation as defined, as the Board will see, by the footnote as site preparation with bulldozers to uproot and pile residual hardwoods.

Our total site preparation program has visibly expanded through the FMA phase-in, along with the level of heavy site preparation, such that by 1988 about 40 per cent of the total site preparation program was in the heavy category.

However, the proportion actually declined to 25 per cent heavy site preparation in 1989 and we expect the future trend to be in the order of about 25 per cent heavy site preparation. So roughly a quarter of our site preparation will be for this purpose in using these techniques.

Q. And overall specifically with respect to the case study area, what conclusions did the company draw from its experience with the activities on these blocks?

A. I would just like to leave a slide of photo 9.5 on for the duration - actually for a moment I think we will turn it off because of the noise - but this is a shot taken in November of 1988 looking west across case study block A and it's noteworthy that although there is dense jack pine regeneration, there is still a component of aspen growing out of these windrows between the stands and, of course, a significant component of the mixed wood stands in the background which were too dense to treat. So we have very much a patchwork of regeneration on this area.

So the conclusions I would draw - if I could have the projector off, please - the conclusions are that jack pine/aspen upland mixed woods are important current and future softwood supply sources due to rapid growth rates to create sawlogs from the jack pine on these sites.

The second conclusion: The management of mixed woods must focus on the jack pine species since future supplies of this species will be tight in comparison to aspen, at least from E.B. Eddy's

perspective.

The third conclusion is that managing mixed woods for jack pine benefits Eddy's maximum allowable depletion by, first of all, increasing the total area of the jack pine working group through conversion of some areas from aspen to jack pine working groups; and, secondly, by increasing the volumetric yield per unit area and time by capitalizing on the enhanced fertility of the mixed wood soils.

These benefits will partially offset the impact of declining area allowable cuts as the jack pine working group approaches the normal age-class distribution. High volume yields per hectare from reduced annual harvest areas must be achieved to maintain the viability of Eddy's mills.

Q. And I understand that there was an interrogatory which was delivered by Forests for Tomorrow which in part dealt with this issue--

A. That's correct.

Q. --the impact of declining area allowable cuts and what you just described to the Board?

A. Yes. That interrogatory is Forests for Tomorrow Interrogatory No. 13(d).

MS. CRONK: And that was previously

filed, Madam Chair, before the Board.

Q. Could I ask you to refer to the relevant portion of that interrogatory, Mr. Nicks, and outline the nature of the enquiry and the response provided by the OFIA/OLMA?

MADAM CHAIR: Excuse me, Ms. Cronk, what exhibit number was that?

MS. CRONK: I believe it's Exhibit 1138, Madam Chair. I am just checking.

MADAM CHAIR: We still don't have it.

MS. CRONK: I am sorry.

MADAM CHAIR: We still don't have it.

MS. CRONK: Right. Just give me a moment, Mr. Nicks, please, I will find it myself. (handed)

MADAM CHAIR: Thank you.

MS. CRONK: Q. Sorry, Mr. Nicks. Could you outline the portion of this interrogatory that is relevant to what you have just been discussing and the nature of the response provided, please?

MR. NICKS: A. All right. The question that was posed was related to a statement that was made in our statement of evidence for Panel 8 that artificial regeneration programs are essential since natural regeneration alone will not provide the future

wood supply needed to sustain the Industry and provincial demand.

The question is: "On what evidence is that statement based?", and there are a number of statements related to that question, and I would like to concentrate on our answer to part (d) since that is particularly relevant to this case study.

Namely, that many FMAs have a preponderance of overmature forest - E.B. Eddy's FMAs are in that category - and the MAD calculations determine an accelerated cut which must be allocated and harvested according to the contract terms. As the age of the forest is reduced to a more normal level, MAD levels and allocations will decline reducing the area of harvest and the associated volumes, therefore, artificial regeneration programs are essential to maximize the future volumes from these reduced areas.

And I would suggest this is particularly applicable in our case and that we have also calculated that through intensive management of the reduced area available we can sustain the current level of production when the stands we are regenerating now are at rotation age.

Q. Thank you, very much, Mr. Nicks.

MS. CRONK: Could I ask you and Mr.

Waddell, if you would please, to take just a moment and to regroup these tree segments and put them back in the bags from whence they came. Thank you.

Could I ask you to keep B separate and C separate. Perhaps if you could just put them to the right behind the easel, we will have them tagged with the exhibit number. Thank you,

I would like to turn now, if I could, gentlemen, to a different topic related to the evidence concerning renewal which you are giving to the Board.

There has been evidence in this hearing before the Board regarding the influence of clearcut size on regeneration, potential and actual regeneration that is achieveable, and I would like to deal, Madam Chair, Mr. Martel, in my next questions with that subject for a moment.

Q. Could I direct my questions in the first instance, Mr. Ferguson, to you. One of the exhibits in this hearing is Exhibit 57, a report dated June, 1976 entitled: Proposed Policy for Controlling the Size of Clearcuts in Northern Forest Regions in Ontario.

Again, that is June, 1976 and it's by a Mr. Flowers and a Mr. Robinson. Are you familiar with that report and its contents.

MR. FERGUSON: A. Yes, I am.

MS. CRONK: I don't think for the purposes of my next questions, Madam Chair, it's necessary to have the exhibit.

Q. There is a suggestion made in that report, Mr. Ferguson, that there was in 1976 increasing - and I am quoting -

"...increasing evidence that excessively large clearcut areas do not regenerate as well as more protected smaller cuts."

Are you familiar specifically with the contents of the report in that regard and the discussion contained in the exhibit about that proposition?

A. Yes, I am, Ms. Cronk.

Q. Is that proposition consistent or inconsistent with the experience of your company in regenerating cut-over areas?

A. I would say that that is inconsistent with the experience of our company.

Q. Can you elaborate on that for the Board, please, and explain the purposes or the basis for that view?

A. Certainly. It has been the observation of myself and Canadian Pacific as a whole

that the sizes of cut-overs does not have any particular relevance to the actual renewal of softwood species and we, upon reading the report in question, Proposed Policy for Controlling the Size of Clearcuts in Northern Forest Regions of Ontario back in 1976, did in fact recognize one of the locations of the photos contained within the report, that being photo No. 21.

This was recognized by our manager of forestry operations as being a location within the Dog River/Matawin Forest, an area which had been harvested by Canadian Pacific during the 1960s.

Q. Where is Dog River/Matawin?

A. The Dog River/Matawin Forest is just west of Thunder Bay just -- I believe it would be just west of the Spruce River Forest which Mr. Squires presented a case study associated with, in very close proximity to our mills in Thunder Bay and one of our major fiber supply sources.

Q. And the area was harvested, did you say, by your company?

A. Yes, it was harvested by Canadian Pacific or actually Great Lakes Paper at that time.

Q. When did harvesting occur?

A. Harvesting occurred between 1965 and 1968. The harvest was a conventional logging system

that was in place at the time, that being a cut-and-skid operation in the cut-over and bucking at the landing.

We had been able to track down some old records of this particular area and our records show that this area was renewed through scarification for natural regeneration using shark-finned barrels, tractor pads, spiked anchor chains. The renewal in fact took place in the year following the cut in each case. As well, a portion of this area had received direct seeding treatment although not the entire area.

Q. What was the size of the harvested or cut-over area?

A. The size of the harvested area which we could identify from the particular photo, that being photo 21 from the record, was approximately 968 hectares in size or if you prefer to look at it in acres, it's around the order of 2,400 acres.

Q. And what site preparation method and equipment were used based on the company's records?

A. Based on our records it would have been site preparation using drags, tractor pads, shark-finned barrels, spike chains pulled by D-7 and D-8 tractors:

Q. Are you in a position, Mr. Ferguson,

to illustrate or outline for the Board what the condition of this area was as described in the Robinson/Flowers report and as it looks today following renewal?

A. Yes, I am. The implications in the Robinson/Flowers report would be that there would be difficulty in regenerating this site.

We have results of stocking surveys conducted 10 years after the renewal treatments which show the area which was harvested in the 1965-66 fiscal year of Natural Resources is currently stocked in excess of 60 per cent jack pine.

Similarly the area harvested in 1966-67 was again stocked to in excess of 60 per cent jack pine, and the area harvested in the 1967-1968 season are ranging between 40 and 60 per cent stocked to jack pine.

Q. Can you show what this area looked like then and what it looks like today?

A. Certainly. If I can refer you firstly to the upper photo. This photo is an enlargement of the photo which is photo 21 I believe, it is from the Robinson/Flowers report.

I would ask that you note a couple of specific features in this photo, the one being this

particular knob in the upper portion of the photo as well as the road system, the main access road traversing the photo, as well as the crossroad.

Q. Mr. Ferguson, excuse me. I am going to hand you a felt pen. Could you point out what you think is relevant on this photo?

A. Relevant, as I say, is the particular knob right here (indicating) and the crossroads.

Q. Right. Why are those two locations relevant?

A. Well, those are relevant when you compare this photo taken immediately following the harvest to the condition of the same area in 1989 -- June of 1989.

Q. Sorry. Just dealing with the photo at the top then, that is the photo you just referred to as being immediately after harvest?

A. That's correct.

Q. All right. And is that the same as, similar to, or different from the photo of this area that appears in the Flowers and Robinson report?

A. That is an enlargement of the same photo.

Q. All right. And what is the photograph at the bottom, please?

A. The photo at the bottom is a photo taken in June of 1989 of the same area, and I would direct your attention to this particular knob again, the same knob that you can see in the upper photo, this particular crossroads.

Q. You are marking the crossroads and the knob on both photos with a red pen?

A. That's correct.

Q. And who took the photograph at the bottom, Mr. Ferguson?

A. The photograph on the bottom was taken by our manager of forestry operations, Mr. Moore, in June of 1989. It was in fact Mr. Moore who recognized the location of the photo in the Robinson and Flowers report and he had been observing it ever since that time and thought it appropriate that he pass on the condition of that particular site at the present time.

Q. How would you describe the conditions depicted in the bottom photograph; namely, the one taken in June of 1989?

A. I would say that the entire area is well regenerated to jack pine primarily although there is a component of hardwood present. You can see back at the time of harvest there was some residual

hardwood, that is still evident, as well there is some hardwood showing up in various locations throughout the photo; however, in general it has regenerated well to jack pine.

Q. And where in the bottom photograph, or can you point out for me in the bottom photograph where the roads are that are depicted in the top immediately after harvest photo?

A. Most of the roads that you can see in the upper photo are no longer visible in 1989, with the exception of the main road crossing through the photo and the one road heading off to the right.

If you look very, very closely you can see some indication that possibly this road visible in the upper photo may be right here, but it's very, very difficult to discern at the present time.

Q. 'This' meaning the road to the left of the main road shown in the top photograph?

A. That's correct, yes.

Q. All right. And can you help me again as to what the stocking assessment results were with regard to that bottom photograph?

A. The stocking assessments would indicate that the majority of the photo was currently stocked in excess of 60 per cent to conifer species,

that being jack pine. A portion, I believe it's in upper portion of the photo, in this general area --

Q. You are pointing to the centre top?

A. That's correct, may be somewhat less than 60, but well in excess of 40 per cent stocked, which is the standard -- minimum stocking requirement of most FMAs.

Q. Why particularly was this site or this top photo chosen to present to the Board, Mr. Ferguson?

A. Well, as I indicated, this area was recognized by our manager of forestry at the time that the report was published and Mr. Moore had been keeping a close eye on this area since that time, just out of his own personal interest more than anything, to see what would develop.

The other reason -- the reason we have chosen this area in particular as opposed to some other area that was contained in the report is, we don't know where the other areas in the report are, we weren't able to identify the location of other photos in the report.

Q. All right, thank you.

MS. CRONK: Madam Chair, can I ask that that be marked as the next exhibit, and if it's

acceptable, could I ask that the top photo be marked A and the bottom B so that I can then distribute some copies.

MADAM CHAIR: Yes. That would be exhibit 1152, the top photo would be photo 21 from the Flowers /Robinson report, and the bottom photo will be the June, 1989 photograph of current conditions taken by Canadian Pacific.

MS. CRONK: Thank you.

---EXHIBIT NO. 1152A: Hard copy of photograph (photo No. 21 from Flowers/Robinson Report).

---EXHIBIT NO. 1152B: Hard copy of photograph of same area (photo No. 21 of Flowers/Robinson Report) taken in June, 1989.

MS. CRONK: Q. Could you mark with your felt pen on the backing of that, Mr. Ferguson, please, the Exhibit No. 1152. Sorry, perhaps if you did it on the white.

MR. FERGUSON: A. A and B.

Q. And I understand you have another photograph from this same area which you wish to show to the Board as well?

A. Yes, that's correct. The one additional photograph I have was taken right at the crossroads, basically in the centre of photo B. Again

this was taken the same day as photo B, this was taken in June of 1989 again, and you can see the general condition of the stand at that time.

Q. Sorry, Mr. Ferguson, I was passing out copies of this. Can you please tell me again the date this photo was taken?

A. June of 1989.

Q. And who is it in the photo?

A. This is Mr. Moore our manager of forestry. It was Mr. Moore who identified this particular area. This photo was actually taken approximately a month prior to Mr. Moore's retirement.

Q. And what does it show?

A. It shows that the area in question has regenerated well, well stocked to jack pine obviously growing well.

Mr. Moore is approximately just something less than six feet tall, and from the photos you can't really tell how tall the trees are because they do extend beyond the top of the picture, but I would say they were at least in the range of 10 metres at this time.

Q. And what species are they?

A. That is jack pine.

Q. Thank you.

MS. CRONK: Could that be marked as part C of the same exhibit, Madam Chair, please?

MADAM CHAIR: Yes. That will be Exhibit 1152C.

---EXHIBIT NO. 1152C: Hard copy of photograph dated June, 1989 taken in the centre of area depicted in Exhibit No. 1152B.

MS. CRONK: Thank you. And I would like to provide the Board with two sets of copies of the original photographs with respect to Exhibit 1152. (handed)

MADAM CHAIR: Thank you.

MR. MARTEL: Thank you.

MS. CRONK: Thank you.

Q. Mr. Ferguson, based on the conditions that you have seen in Exhibit 1152, parts A, B and C of that exhibit, what is your view, based on your own experience in the area of the undertaking and on the conditions that you have observed in these photographs, as to the proposition that clearcut size can negatively influence capacity to regenerate?

MR. FERGUSON: A. It is my view that there is no basis for that proposition.

Q. Mr. Nicks, if I could turn to you. Has your company made any effort to investigate the

same proposition; that is, that clearcut size influences regeneration potential?

MR. NICKS: A. Yes, it has.

Q. And what has been done by your company in that regard?

A. In the fall of 1988 our company as well as CP Forest Products of Thunder Bay undertook surveys to determine if clearcut size affects the frequency and the growth of jack pine regeneration.

One of the central allegations or propositions of the Flowers/Robinson Report is that there was a depressing effect on jack pine abundance and growth as one moved out from the edge of uncut timber to the middle of a large clearcut.

So in order to determine if there was any validity to that argument, our company surveyed a 5-year-old MNR plantation northwest of Espanola approximately 20 miles northwest. The maximum width of this cut-over was about 1,450 metres. We weren't able to find a clearcut actually more than a 128 hectares with defined edges.

The treatment had been spring sown jack pine, paper pot stock with the paper removed prior to planting. CP surveyed a 7-year-old seeded area in the English River Forest northwest of Thunder Bay. Again,

this project was very similar in size, 132 hectares with a maximum width of 1,200 metres. The aerial seeding of jack pine had been conducted in 1981.

Q. Why was locating a clearcut with edges considered by your company and by CP to be significant or relevant?

A. Well, the proposition had been that as one presumably moves away from the sheltering effects of uncut timber that the tendency of a site to dry out or whatever would increase and that it would have a negative effect on growth, so it was imperative that we find sites that had standing uncut timber.

Q. And what was actually done for the purposes of these surveys?

A. Well, the first thing to do was to attempt to inject some statistical validity into the survey. To my knowledge there had been very little evidence of that in the Flowers/Robinson report, so we undertook a preliminary sampling of frequency, height and diameter to calculate the sample sizes we would need to provide estimates accurate to five -- within five per cent of true mean values.

MS. SWENARCHUK: Excuse me, could you speak a little more slowly.

MR. NICKS: Okay.

MS. CRONK: Q. Sorry, could you repeat? What did you do?

MR. NICKS: A. Yes. We calculated sample sizes through preliminary surveys to determine data that would be accurate within five per cent of true mean values at a 95 per cent probability level, and when that sample size had been determined the sites were surveyed, analyses of variance and linear regression analysis - which are two accepted procedures for analysing plot data - were then performed on individual plot data to relate the distance from the edge of the clearcut to the density of stocking, the height, the diameter and the stem volume of regeneration.

Q. Could you just repeat that, Mr. Nicks, please? You then did analysis of variance and linear regression analysis?

A. That's correct.

Q. On plot data to relate what?

A. The distance from the edge of the clearcut.

Q. Okay. One, the distance from the edge of the clearcut.

A. Two, the density, the stocking, the height.

Q. Sorry, density, stocking, height?

A. Diameter and stem volume of regeneration. I should point out here that the analyses that we did on stocking and density only occurred related to the seeding since the planting was done at very regular spacing and there was no visible effect whatsoever on density or stocking because of the very high rate of survival of trees.

Q. And were those analyses done with respect to both the area that your company surveyed and the area that CP surveyed, or only one of the two?

A. They were done with respect to both areas.

Q. And what were the results of these analyses?

A. Okay. By way of explanation - and I hope I can make this clear - the correlation coefficients were determined for as a result of regression analysis. The correlation coefficient attempts to correlate the change in one variable to a change in another. And the independent variable in this case was distance from clearcut edge; the dependent variabilities were all the others, jack pine growth in particular.

Q. For my benefit if no one else's, Mr.

Nicks, can you put that in non-statistician language. What were you trying to do?

A. Basically to determine the effect of distance from edge of clearcut which relates to clearcut size on the measurable parameters, the important parameters of regeneration which are, as I mentioned: density, stocking, particularly for seeded areas, height, diameter and volume.

Q. All right. And what were the results?

A. Okay. I have an overhead which I would like to present to the Board.

MS. CRONK: That is part, Madam Chair, of the additional overheads filed this morning to be referred to by Mr. Nicks.

MADAM CHAIR: Thank you.

MS. CRONK: For the benefit of my friends, that is part of Exhibit 1147 this morning.

MR. NICKS: Okay, what the title of this table is, is - so I don't block the Board's view - Squared correlation coefficients - or R squared values as they are called - to indicate represent per cent of variation in jack pine stocking, density, height and volume attributable to distance from edge of clearcut. And the values are for stocking and density. As I

stated, we were only concerned with the seeded areas since stocking and density was largely determined by the planting operation itself.

The figures were approximately 2 per cent for both stocking and density, which means that as an estimate at least only about 2 per cent of the variation in stocking and density, as one moved out from the edge of the clearcut, were attributing to the distance from the edge of clearcut. The rest of the variation was dependent on other factors, and some of those factors would be seed deposition rates, soil texture, degree of competition, rodent feeding, et cetera.

MS. CRONK: Q. And what about height and volume? What were the responses there for the seeded jack pine?

MR. NICKS: A. Again, for height on the seeded area, .31 per cent of the total variation in height moving out from the edge of the clearcut was attributable to the distance from clearcut edge and none of the volume variation, so there was no correlation whatsoever according to our data.

For the planted area, the trend in variation was slightly positive at least on the graph of the regression analysis which attempts to depict a

straight line through the data. There was a slight upward trend, but I am not hardened by that particularly because the correlation coefficients are so low at 6.35 per cent for height; 9.31 per cent for volume that they are essentially meaningless.

Very little if any of the variation in height and volume for the planted area can be attributed, in our view, to the distance from the clearcut edge.

Q. What do these results then for all of these parameters; stocking, density, height and volume, what does this data indicate to you?

A. What it indicates is that in the cases of clearcuts of the dimension at least that we were able to find, which entailed distances from edge of up to 725 metres I believe or half of 1,450, as one moves out even up to three quarters of a kilometre from the edge of a cut-over there is, according to our data, no measurable effect, no significant effect on any of the important growth parameters which would lead me to concur with Mr. Ferguson's evidence, albeit this is based on a much smaller size of clearcut.

Q. Thank you very much, Mr. Nicks.

MS. CRONK: Could we have the lights?

MS. SWENARCHUK: Excuse me, Madam Chair,

but no reference to this material was made in the witness statement. I wonder if Ms. Cronk could produce for us the full report on which this information is taken.

MS. CRONK: Q. Mr. Nicks, do you have a written document of any kind that you can provide to my friend that sets out the facts that you have put forward before the Board this morning concerning these surveys?

MR. NICKS: A. Not in my possession.

MS. CRONK: We will undertake to provide whatever there is in writing setting out these data.

MS. SWENARCHUK: We want to know the methodology and location of the plots and all the relevant factors that went into the study.

MS. CRONK: Well, I will discuss with my friend Ms. Swenarchuk what she needs. I will find out from Mr. Nicks what there is, and what there is we will produce.

MADAM CHAIR: Thank you.

MS. CRONK: Thank you, Mr. Nicks.

Madam Chair, I am about to move into another area with the witnesses. I don't know what the Board's pleasure is in terms of the lunch break today --

MADAM CHAIR: Well, why don't we take our lunch break now then and we will come back at 1:30.

And we would remind the parties that we have a scoping session this evening for Panel 9.

MS. CRONK: Yes.

MADAM CHAIR: And it will start at five o'clock when we finish the session today.

MS. CRONK: Thank you very much, Madam Chair.

MADAM CHAIR: Thank you.

---Luncheon recess taken at 11:55 a.m.

---On resuming at 1:30 a.m.

MADAM CHAIR: Please be seated.

MS. CRONK: Thank you, Madam Chair.

Q. Gentlemen, when we began this discussion last week and you commenced your evidence regarding renewal we had, when we were in Thunder Bay, been discussing the process of timber renewal from the Industry's perspective and the planning and implementation components of that process described by Mr. Ferguson with respect to the planning component and by Mr. Squires and Mr. Nicks with respect to implementation.

Can I ask you, Mr. Waddell, to turn to the third element of that; that is, monitoring. And

can you tell the Board, please, what it involves from the Industry's perspective?

MR. WADDELL: A. Yes, Ms. Cronk, and could we have an overhead on please, Mr. Ferguson.

Yes. The Board will recognize Figure 2 that has been shown to you on at least two occasions in the past and the Industry has now covered in our evidence package the planning and implementation components, the two blocks on the left.

Immediately below the implementation block is monitoring, and that is what we would like to speak with you about this afternoon.

The monitoring from Industry's perspective involves the assessment of performance under the forest management agreement program and it involves the effectiveness of renewal activities. And I would like to remind the Board that the Industry has always been a committed proponent of performance monitoring since the inception of the FMAs and indeed it was the Industry that requested, as one of the conditions that we proposed to entering forest management agreements in 1978 or '79, one of the conditions we requested was that there be an effective performance monitoring program established so that the Industry could be measured in terms of its performance.

We believe that appropriate performance monitoring is essential to the achievement of timber management objectives.

Under the FMA program we report our renewal activities in a number of ways. If I could have the next overhead please, Mr. Ferguson.

Q. Are you going to be referring now, Mr. Waddell, to a number of overheads?

A. Yes, I am.

MS. CRONK: Madam Chair, Mr. Martel, you may find it useful to have before you Exhibit 1139 filed last week, which is a series of overheads to be referred to by Mr. Waddell in his evidence.

MADAM CHAIR: We have 1138 now but we don't have 1139.

MS. CRONK: Here are duplicate sets of 1139. (handed)

MADAM CHAIR: Thank you very much. And this is yours, Ms. Cronk. (handed)

MS. CRONK: Thank you.

Q. I am sorry, Mr. Waddell, you were about to describe how the Industry reports on its activities.

MR. WADDELL: A. Yes. And on the overhead we have listed seven ways in which the

Industry describes or reports its renewal activities.

First of all, through the process of timber management planning, in the preparation of our 20-year timber management plans, we outline the harvest, the renewal and the access and maintenance activities that will be carried out on each forest management agreement over the five-year period.

The second item is of course the five-year FMA reviews by the Ministry, and the purpose of these reviews is to ensure that the FMA holder meets the obligation of the forest management agreement and the groundrules and to provide accountability to the Ontario Legislature. And this system of reporting five-year review provides an ongoing monitoring of company activities and of our performance under the terms of the FMA.

The third item is the submission to the Ministry of the annual reports, and these detail harvest and renewal activities carried out in the preceding year and they allow a comparison of the work that we plan to do against the work that we actually accomplish.

Fifth-year stocking assessments are a contractual obligation of the FMA and the FMA holder carries these out and submits the result to the

Ministry of Natural Resources. We are of course obligated under the terms of the FMA to retreat areas that have not met the fifth-year stocking assessment standards as laid out in the groundrules.

The fifth item is free to grow request. The FMA holder is obligated to request the MNR to carry out free to grow surveys on all naturally and artificially regenerated areas.

The sixth item is the detailed invoices, the silvicultural invoices that the FMA holder submits to the MNR for payment under the terms of the Forest Management Agreement Act -- pardon me, under the terms of the forest management agreement.

And finally there are field inspections by various government agencies other than MNR such as MOE and Ministry of Health to ensure that the FMA company is carrying out its various renewal activities in an appropriate manner.

Q. Now, if I could stop you there for a moment, Mr. Waddell. Could I direct your attention to Item No. 5, free to grow requests to the Ministry of Natural Resources.

A number of clarification questions were posed by the Board with respect to surveys of this kind. Can you assist first with respect to this aspect

of the matter. Are free to grow surveys or free to grow assessments by the Ministry of Natural Resources conducted from the Industry's perspective on time?

A. From an Industry perspective there are situations across the province where we have felt that the Ministry has not been able to carry out their obligations on free to grow assessments on time.

There are situations where apparently the work has been done or was in the process of being done but we have not received the formal reports as yet, and I believe there are also other situations where the field work either is ongoing or it has not been completed.

I cannot give you an overall response on an Industry-wide basis on that, but that is my understanding.

Q. And do you have any understanding as to, in those cases -- where that is the case, as to the reason for the delay?

A. Well, we understand from our discussions with the various Ministry Crown reps with whom we are involved, we understand that they have a problem with funding and with staffing and this has reflected on their ability at times to carry out the surveys in the year in which they would like to

complete them.

Q. Is that universally the case?

A. I can't say, Ms. Cronk, I don't know universally.

Q. All right. Let's talk about your own company. Is there a backlog of free to grow surveys with E.B. Eddy?

A. To the best of my knowledge at the present time there is not. We did have a situation a couple of years ago where that was the case but, as I say, to the best of my knowledge right now everything that we have applied for has been field inspected and we have the reports back.

Q. Well, just dealing with the timing aspect of it, is the OFIA -- I should say, are the OFIA/OLMA proposing any terms and conditions related to the timing of free to grow assessments?

A. Yes, we are, Ms. Cronk. We are proposing term and condition Industry No. 95. If I may show an overhead of that at this time, it's from -- I am not sure of the exhibit number.

MS. CRONK: An overhead of that, Madam Chair, is included in Exhibit 1139. I believe that is the case. I will just check it. Yes, it should be the very last page in that exhibit.

Q. This is a little difficult to read, Mr. Waddell, because of the way the line in the screen has fallen. But can you outline for the Board, please, what the nature of the condition is?

MR. WADDELL: A. Yes. The proposed condition 95 that the OFIA/OLMA is submitting is to cover the free to grow situation. At.

Present there are no requirements as to when a management unit forester must submit free to grow stands to the Ministry for assessment and, similarly, there is no time period within which the OMNR must carry out this survey and get back to the FMA holder.

And we, the Industry, believes that greater accountability is required here by both parties, and to rectify this situation we are proposing this term and condition.

And it simply says part (a) that: When fifth-year stocking assessment results are submitted to the Ministry, the unit forester or the FMA holder, as the case may be, will advise the year in which he or she anticipates these stands will be submitted for free to grow status, then the unit forester in the appropriate annual work schedule will formally request the Ministry to carry out free to grow assessment in

specific stands.

So when we submit our annual work schedule we will detail the stands in which we want the Ministry to carry out free to grow assessments. The Ministry will carry out these free to grow assessments and will report the results back to the unit forester or FMA holder no later than two years from the date of the annual work schedule requesting the assessment was submitted.

If I can give you an example. We submit our annual plans on the 1st of December of each year, so on the 1st of December of 1990 an FMA holder would submit a series of stands to the Ministry requesting the Ministry to carry out the free to grow surveys. The Ministry would be obliged, if our term and condition is accepted, they would be obliged to complete the free to grow surveys and report the results back to us by November the 1st, 1992. So they have two field seasons, and that is the key, two field seasons to carry out the program.

That is our proposed term and condition.

Q. Are there, in your experience, sufficient MNR personnel and resources to carry out free to grow assessments at the present time when required by the Industry? I should tell you, Mr.

Waddell, that again this is an enquiry from the Board.

A. I am sorry, Madam Chair, I don't feel competent to answer that question. I really have no way of knowing what the internal priorities or staffing situation is in the Ministry of Natural Resources and I would -- if I would hazard a guess it probably varies from region to region and district to district, but I personally am afraid I can't answer or give you even a reasoned opinion on that.

Q. Apart from the reporting mechanisms that you have described, are there as well monitoring initiatives carried out by the Industry itself, by Industry companies?

A. Yes. The Industry carries out its own internal performance and effectiveness monitoring. These monitoring activities vary from company to company and management unit to management unit depending upon the corporate policy, site conditions, and local requirements and I would like Mr. Ferguson to show the next overhead, please.

And I will show you some example of these company activities in which we initiate our own monitoring. First of all, in our site preparation options we carry out monitoring on ourselves to assess the effectiveness of our site preparation technique

and, in so doing, we measure such things as mineral soil exposure, area coverage, plantable microsites, soils and so forth. Case study 4A, the Canadian Pacific in Appendix 9, has included samples of the actual sample plot procedures that they use for site preparation effectiveness monitoring.

The second item that is monitored by the Industry is planting quality, and in planting quality of course you are measuring for a lot of different variables such as planting depth, proper microsite, angle of planting and so forth. And again, we have included a sample of the quality planting forms that happens to be E.B. Eddy that we use on our planting quality assessments, and these are contained in the Appendix A of the Panel 8 witness statement.

The third item is aerial and ground seeding and items that are measured here, for example, would be the rate of coverage, and we have included sample forms for this. And that was again from the Canadian Pacific case study in Appendix 8 and it is called seed monitoring, at the back of the case study 4A.

The fourth item that Industry does is survival plots, and I would like to stress survival plots are done only on planted areas, they have no

relevance to seeded areas. The Industry carries out its own survival measurements.

The fifth of course is stocking. We are obligated to carry out fifth-year stocking. Many company's carry out stocking other than in the fifth year as well for their own particular data collection needs.

Growth and yield statistics are also collected by various companies through long-term permanent sample plots.

And finally, past projects and treatment methods. We continually monitor the results from past projects and past treatment methods to determine the relative success or failure of our various techniques and try to determine the reasons for each, and then we try to build on those results for better techniques for the future.

And there is an example of this in Mr. Ferguson's case study of Canadian Pacific, and I would ask if he would briefly outline that to the Board.

MR. FERGUSON: A. Yes, Mr. Waddell. I believe the example you are referring to is the evaluation we conducted of the effectiveness of renewal using the Bracke scarifier with simultaneous seeding, both associated with the case study area as well as

other projects conducted in the early years of the forest management agreement.

Based on observations which we made of the results of this renewal method we did alter that method. We altered the use of the Bracke itself in that we increased the number of seeds that were dropped at a particular time, we restricted use of the Bracke to a very specific time of the year, we became very selective of the type of site we use the Bracke on and, in fact, have moved on to different regeneration techniques which we find to be much more successful than this particular method.

The Bracke is used in very limited situations at the present time. As I say, most of our renewal is now done by other methods.

MR. WADDELL: A. Thank you, Mr. Ferguson.

A second example of where we study past renewal techniques and try to improve on them and do so is found in the E.B. Eddy case study, and I would like to show you once again the slide that Mr. Nicks showed you prior to lunch.

If I could have the overhead off, please. And this is slide -- a slide of Figure 8, case study 4B, page 40 of case study 4B. And again, what we are

illustrating here is the change in technique in our company's site preparation practices from our experiment in 1981 when we first got into the heavy windrowing of aspen -- residual aspen that we described to you before lunch to where we are today in 1988. Because this proved to be a very effective technique, we experimented with it in 1981. The results were encouraging and, as you can see, we are building on that program in subsequent years.

Also, as Mr. Nicks has told you, that level of heavy site preparation is not increasing beyond the level of what you see there. As a matter of fact, in 1989 it's back to 25 per cent of our total site preparation program. We anticipate that for the next five years it will remain between the 20 and 25 per cent of our total site preparation program, but that's a program that has been developed because of what we learned from past practices.

MR. MARTEL: Can I ask a question? If it's as effective as you say, and we saw evidence of that today, why would you restrict your site preparation to only 25 per cent of the heavy; is there some reason for that?

MR. WADDELL: Yes, Mr. Martel. This type of site preparation is only applicable in mixed wood

stands and the majority of our cutting operations, as you are familiar with, are carried out in basically pure jack pine stands in the Ramsey/Chapleau area. In those kind of forest conditions we do not need to do heavy site preparation, there is no component of aspen, and we can effect good site preparation with a later type of equipment, a skidder pulling some type of a disk trencher is very adequate.

And again just to stress, we only carry out this type of heavy very site prep on the better of our mixed wood upland stands and those parts of our mixed wood upland stands that do not have, for example, more than roughly 12 cunits per acre of residual poplar. Any more than that and it gets into real logistical problem of trying to windrow that poplar and it becomes self defeating, so we allow those areas to regenerate back to poplar.

MR. MARTEL: Thank you.

MS. CRONK: Q. Thank you. Then just dealing with the various monitoring initiatives that you have outlined, as a general matter, Mr. Waddell, are the results of company-initiated monitoring efforts or measures always disclosed to the Ministry of Natural Resources?

MR. WADDELL: A. I am sorry, Ms. Cronk,

I was concentrating on something else there. Would you mind repeating that question?

Q. That's all right. You showed the Board a list of various monitoring initiatives by the Industry and my question to you is: As a general matter, are the results of company-initiated monitoring measures always disclosed to the Ministry of Natural Resources?

A. No, they are not. At times they are discussed with the Ministry, but there is no definite procedure there and there is no routine for doing so.

Q. Is there any particular reason why they are not?

A. I suppose you could say several reasons. First there is -- as I mentioned, there is a considerable variability in how these self-implied or self-imposed monitoring practices are carried out across the province; each company does it a little differently; the data is not compiled in a consistent fashion, it often is raw data.

Many of the programs are ongoing and I am not sure necessarily how particularly useful much of that information would be to MNR. Possibly the major reason, however, is that I think that the Ministry have their own monitoring programs and they like to keep

this independent from ours, and by not collecting our results or asking for our results I suppose they are able to maintain this sense of independence and maintain the independent review or independent monitoring, if you will.

Q. I see. Well, turning then to the issue of accountability, can you describe for the Board how the Industry perceives that it is accountable for its renewal activities on Crown lands in the area of the undertaking?

A. Yes. We certainly are accountable for our renewal activities to the Crown, after all the Crown owns the land, we are just the leaseholder, and the results of our efforts are measured and documented in several ways.

And again, Mr. Ferguson, if I could ask you for an overhead, please.

What we have here is a list of some of the ways in which the forest industry is accountable and does report its renewal activities to the Crown.

First of all, the annual reports. As we have mentioned before, the mandatory fifth-year stocking, the mandatory fifth-year FMA reviews, and the MAD calculations. Now, the amount of area and, therefore, volume that an FMA holder can harvest is

calculated and controlled by the MAD calculation. The MAD calculation of course is very strongly impacted by the renewal program, whether it be good or bad that the FMA holder carries out, so there is a very powerful incentive for an FMA holder to carry out as great and as good an FMA program -- pardon me, a renewal program that he can because the better renewal program we carry out the more effective our results, that translates into a better allowable cut down the road for us. So it's a very powerful tool.

The long-term consequences of an inadequate renewal program is there is a reduction in our MAD volume and, consequently, somewhere downstream there could be mill downsizing or ultimately even mill closures. So it's a very powerful incentive to us. And then, of course, there are all the other mandatory requirements of the FMA and the associated groundrules.

Q. What is the result, from the Industry's perspective, of these various accountability mechanisms, if I can describe them that way?

A. Yes, Ms. Cronk. If I might add one more that I didn't put up there, but it's come to mind; and, that is, that I guess in the final analysis Industry is accountable to all of its owners, its investors, the local community and certainly our own

employees. We have an obligation to all that group to carry out a good and effective renewal program so that we can continue to provide jobs for those people in the years to come.

Q. Well, dealing with all of them then, including the last that you mentioned, what is the result of all of those mechanisms from the Industry's perspective?

A. Well, I think that all the accountability processes ensure Industry's commitment to an effective renewal program and they ensure Industry's performance in carrying out the renewal program is assessed on a regular and a continuing basis.

Q. Are you familiar, Mr. Waddell, with the monitoring proposal that the Ministry of Natural Resources has made in its draft terms and conditions filed with the Board?

A. Yes, I am.

MS. CRONK: Madam Chair, I wonder if the Board has available to it Exhibit 700 which are the draft MNR terms and conditions?

MADAM CHAIR: Yes, we do, Ms. Cronk. We don't have your draft terms and conditions, but they are next door. Do we need them?

MS. CRONK: No, that's fine, Madam Chair.

MADAM CHAIR: Which one are we looking at?

MS. CRONK: Exhibit 700, MNR's terms and conditions. Thank you.

Q. Mr. Waddell, are you familiar with the term compliance monitoring as it's used in the MNR's draft terms and conditions?

MR. WADDELL: A. I think so.

Q. What do you understand it to mean?

A. I understand compliance monitoring to be, as defined in the EA Document, to mean those activities undertaken by the Ministry of Natural Resources to ensure that timber management operations comply with the approved timber management plan and any special conditions imposed by the agreement or legislation and with all applicable procedures and government policies.

Q. Well, just dealing with compliance monitoring as it's dealt with by the Ministry of Natural Resources, are there any terms and conditions proposed by the MNR dealing with compliance monitoring in respect of which the Industry has a particular interest or takes a particular position and, if so, I would ask you to outline what they are to the Board and

what that position is?

A. Yes. Specifically there are three terms and conditions in this area of particular interest to the Industry and they are conditions 17, 49, and 56 as shown in Exhibit 700.

And again I would ask Mr. Ferguson if he would be kind enough to put on the next overhead. We have taken the liberty to paraphrase these conditions, but essentially what they are is condition 49:

"The Ministry will undertake compliance monitoring of harvest, renewal, maintenance and access."

Condition 56 is:

"The Ministry will undertake operational audits, monitor the compliance."

Condition 17:

"The Ministry will undertake a compliance monitoring program of operations in areas of concern:"

Q. What is the Industry's position generally with respect to those three proposed terms and conditions?

A. The Industry supports these terms and conditions based on our understanding of them and we believe that these particular terms and conditions are

appropriate for several reasons.

And, first of all, as previously stated, we believe it's essential that Industry's performance in carrying out renewal activities on the FMAs be monitored and assessed on a regular basis by the Minister of Natural Resources and the Ministry's proposed terms and conditions specifically contemplate performance monitoring.

Secondly, we firmly believe that Crown management units must be managed to the same standards as are FMAs. And this is essential if we are going to maintain an adequate wood supply for the future. So that we believe that the performance of the timber managers on Crown management units must be subject to the same compliance monitoring as on FMAs.

Also Ministry's terms and conditions propose monitoring of both actual performance and compliance with legislation and provincial policies and procedures, so in our opinion it's very appropriate that the ultimate responsibility for compliance monitoring should rest with the government agency that is responsible for the management of Crown lands and, of course, I am referring to the Ministry of Natural Resources.

Q. Apart from these three terms and

conditions, that is Nos. 17, 49 and 56 relating to compliance monitoring, there are a number of other terms and conditions that the Ministry of Natural Resources have put forward dealing with compliance monitoring. What is the Industry position with respect to these, if any?

A. Yes. The other Ministry terms and conditions that deal with compliance monitoring of renewal activities are conditions 8, 11, 12, 13, 32, 41, and 53 and I think we can have that overhead off now, please.

The Industry generally supports these proposals -- or terms and conditions, I should say, on the basis that we understand that they will provide for procedures and mechanisms to ensure that renewal activities are properly considered, both at the planning stage and after implementation for the purposes of ensuring adequate performance.

As previously I mentioned in this panel in Thunder Bay, however, we do have some concern about condition No. 11 because that is the condition that could be interpreted -- as it's presently written, it could be interpreted in a manner that would restrict the manager's ability to make the site-specific decision regarding the types of harvesting and the

types of renewal that, in his opinion, are best suited for that particular site. So we do have reservations about that component, proposed condition No. 11.

Q. Well, could you deal now with the terms and conditions proposed by the MNR with respect to effectiveness monitoring and, once again, could you outline first what the Industry understands that term to mean as it's used by the MNR in its draft terms and conditions?

A. Yes. Again referring to the EA Document -- or on page 192 to 194 of the Class EA Document -- or on page 94 of this particular panel, Panel 8 of the Industry's witness statements, it's the same definition and we define effectiveness monitoring to include assessments of timber management practices and prescriptions in terms of achieving the purpose of the undertaking and of the effects of these treatments on the environment.

And, once again, are there any draft terms and conditions proposed by the MNR dealing with effectiveness monitoring in respect of which the Industry has a particular interest or takes a particular position?

A. Yes, and these terms and conditions are 42, 43, 51, 54, and 56 and I can briefly go over

these.

Condition 42 will require the program of planned free to grow assessments during the five-year period of the TMP to be documented in the TMP for each unit. The results of such surveys shall be reported in the annual report and in the report of past forest operations in the TMP and in the provincial annual report of timber management. The Ministry strongly supports this condition.

Condition 51 requires that the MNR will undertake a provincial program of forest yield and growth studies and Industry, for very obvious reasons, strongly supports this condition as well. This program will help us all to determine overall silvicultural effectiveness and it would assist us in assessing our future wood supply in the province.

Industry does have some reservations about conditions 43, 54 and 56 and if I may speak to those.

Condition 43 will require condition information such as second-year survival to be reviewed every five years and the results reported in each TMP. At the provincial level, these results will be shown in the state of the forest report to be produced every five years. Industry is concerned about the type of

assessment data contemplated in this particular condition. Our concerns centre on second-year survival and what the Ministry may include in the category of condition information.

Q. Well, just dealing then for a moment with second-year survival data, what is the nature of the Industry's position on that?

A. Well, our position on second-year survival is that many of the companies collect it now for their own internal purposes but it's not mandatory. Many of the companies don't collect second-year survival, they collect it maybe in the first year, maybe in the third, maybe in first, second and fourth, or any other combination thereof, but it's not mandatory at the present time and we would not like to see it made mandatory.

Q. I am going to invite you to elaborate on that in a moment, but dealing then with the other conditions that you mentioned, condition 54 and 56, you indicated that you wanted to deal with those particularly, as well as 43.

What position is it the Industry takes with respect to 54 and 56?

A. Well, since the terms of condition 43 would be mandatory if approved, we have to look at

conditions 54 and 56 in this context.

Condition 54 requires assessment data such as second-year survival to be tabled in the Legislature as part of the annual report of timber management.

Condition 56 requires operational audits by MNR to include an assessment of silvicultural effectiveness, which if we accept -- or if condition 43 is accepted as is, would include assessment of unidentified other condition information and second-year survival results.

Our objections to mandatory second-year survival are based on a number of reasons. First of all, the criteria for deciding the need for any form of data collection or assessment surely should be whether that information is going to be sufficiently useful to justify the time and cost involved, and we don't believe that mandatory second-year survival assessment is in this category.

Secondly, the current survival rates of healthy stock are consistently high in most cases, especially for container, and we will be showing you our evidence of this later in this panel.

Third, operational planting densities that we use today ensure attainment of minimum stocking

objectives even with the normal rate of seedling mortality.

Another point is that survival rates bear no consistent relationship in our opinion to fifth-year stocking and fifth-year stocking is the criteria by which we meet our obligation under the FMA.

Survival results do not account for the spacial arrangements of the seedlings, they do not account for natural regeneration and they don't account for the carrying capacity of any particular site, therefore, we think that second-year survival data, while it has certain uses, overall it can be poor and misleading in terms of predicting regeneration success.

Q. Now, if I can interrupt you there, Mr. Waddell. Mr. Nicks referred earlier today I believe to Forests for Tomorrow Interrogatory No. 30 which was before the Board as part of Exhibit 1138, and that relates to second-year survival data. Do you have a copy of that available to you?

A. Yes, I do.

MS. CRONK: I am sorry, the Board does have it.

MADAM CHAIR: We do have Exhibit 1138 now. Thanks, Ms. Cronk.

MS. CRONK: Q. Mr. Waddell, could you

take a moment and just look at that interrogatory and I would ask you to comment, if you would please, on the response that is given and indicate whether that request is in your view as well concerning the usefulness of second-year survival data; that is, Forests for Tomorrow Interrogatory No. 30?

A. Yes, it reflects my view. You have the two situations there where you had the same degree of survival, 90 per cent, and yet one area ended up as 45 per cent stocked and the other ended up as being 90 per cent stocked and yet they both had the same level of survival. That illustrates I believe the point we are trying to make.

Q. Are there any other reasons from the Industry's perspective that mandatory collection of second-year survival data is inadvisable?

A. Yes, there are. The requirement to report on a mandatory basis second-year survival data would very likely mean a considerable cost increase to the FMA holder because of the predictably greater number of plots that we would have to put in.

And another reason is that -- well, let me refer to David Gordon of the Ministry of Natural Resources evidence before the Board. This was in Volume 30, page 4886, and in that he stated that:

"Survival data cannot be equated with and does not provide necessarily a measure of regeneration effectiveness."

Therefore, it's unnecessary and unwarranted to require these assessments on a mandatory basis. I don't want to infer that that last statement is Mr. Gordon's, it's not; it's mine.

Mr. Gordon's evidence was to the effect that, in his opinion, second-year survival data was not a good reflection of the success of a plantation.

Q. Do you agree or disagree with that?

A. I completely agree with that.

Another point is that survival assessment is only relevant to planting, it has no usefulness for aerial seeding or any other -- or any form of artificial regeneration, so it can only be applied to planting.

Q. I'm sorry, I thought you just said that it couldn't be applied or had no application to any form of artificial regeneration. Isn't that what planting is?

A. I think I confused myself and everyone else there. Let me restate the situation.

Q. Well, certainly me. What did you mean?

A. Survival assessment is only relevant to planting, it is not relevant to the other form of artificial regeneration; namely, seeding.

Q. I see, I am sorry. Thank you.

A. And it has no relevance to any form of natural regeneration. So when you put that in perspective it is only relevant to a portion of the total renewal program in Ontario.

And later on in this panel Mr. Nicks will be referring to a specific table which I would like to show to you briefly now. If you would turn to page 124, please, of the Industry's renewal witness statement. What we have here is a summary of fifth-year stocking assessment results the end of 1988?

Q. That is page 124, Mr. Waddell?

A. Yes, Table 3. Now, I don't propose to get into any details, Mr. Nicks will be getting into this later, but what I would like to point out to the Board, if you go to the bottom of the page under proposed working group you will see that all working groups, the total treated area was 73,729 hectares. That is the figure to keep in mind for now. So that was the total area that was assessed for fifth-year stocking assessments.

It doesn't show it on this table, but we

worked this data out and I can tell you that of that area 18,246 hectares was planted, the balance was either seeded or some form of artificial regeneration. So, in other words, the planted portion of this works out to a little under 25 per cent.

So second-year survival or any other form of survival assessment is only pertinent to less than 25 per cent of the total area that we have figures for assessed by the Industry in the past number of years. That is the point I am trying to make. It is relevant only to a relatively small percentage of what we actually do. Stocking is a much more appropriate measure than is survival.

Q. Just dealing with what you have just said about this table, Mr. Waddell - and we will come back to it - does the table deal with areas assessed for natural regeneration as well as artificial?

A. Yes, it does.

Q. Okay. So that the 73,729 hectares, did you intend to say that that was simply artificially regenerated areas? Does that include those assessed for natural regen as well as those assessed for artificial regeneration?

A. I intend to say that it's the total of all the regeneration program both natural and

artificial done by the Industry over that period of time and for which fifth-year stocking assessment results are available.

Q. Thank you very much.

A. And of that only 18,000 were planted or less than 25 per cent, and the point I was trying to clarify was that, therefore, survival results are only pertinent to approximately 25 per cent of the total area regenerated.

Q. Well, what is the current practice in the Industry with respect to second-year survival assessment?

A. The practice in the Industry across the area of the undertaking now is very varied; it is not mandatory, there is no mandatory provision for the FMA companies to carry out second-year survival or any other survival.

And I would like at this time to refer the Board to Exhibit 915 which is the Forest Resource Bulletin 14 02 21 that deals with silvicultural effectiveness surveys and it was issued by the Ministry of Natural Resources December the 6th, 1988.

Q. And I am not sure that that was on the list of documents put forward before the Board to have with them today, Mr. Waddell. Perhaps you can

tell us what it says and why you think it's significant?

A. Yes. It deals with condition surveys and free to grow surveys and survival assessments are a form of condition surveys. The gist of this bulletin that I would like to put before you, I would like to quote:

"Condition surveys can be conducted at any time in the life of a stand and are not of a mandatory nature. They are conducted when local forest managers consider that some forest stand condition information is required."

And that is the point I would like to stress, that these survival assessments should be conducted by the local forest manager when, in his opinion, he feels that there is some particular forest condition there that he wants to assess, in this case, survival.

And that is the way that -- that is what is in effect right now and, as I say, this bulletin was just issued a little more than two years ago by the Ministry of Natural Resources.

Q. It's been suggested by some, Mr. Waddell, that second-year survival assessments might

serve as an early warning system, if I can put it that way. Do you agree or disagree that that is the case, or that they could be useful for such a purpose?

A. I don't feel there is anything magical about second year. From our experience, if you are going to have a problem with survival it would normally be at the end of the first year, if you are going to have a major problem. You are going to get -- generally speaking, you are going to get your highest level of mortality in your first year of planting not your second. So, no, I don't concur with the statement, Ms. Cronk.

Q. Well, what is the practice in your own company?

A. The practice in our own company is that we do carry out survival assessments, we do carry some out in the first year on some areas, we do some in the second year and we do some in the fifth year.

Again, it depends upon the individual forest management forester in charge of his FMA, that is left to his discretion. When we feels that he wants survival information he collects it.

So we do not have a uniform company policy on that and I think that is reflected right across the province, because various companies have

their own policy on it as well.

Q. Well, if I could interrupt then for a moment. Gentlemen on my left, Mr. Ferguson, could I start with you. What is the practice of your company with respect to the collection of survival data?

MR. FERGUSON: A. The practice for collection of survival data in Canadian Pacific is in the first year and in the third year. The rationale behind that, as Mr. Waddell has indicated, is that the most stressful period for a seedling is in the first growing season. It has been our experience that if the seedling survives through the first season, that in very very high probability it will be there and healthy in the second growing season.

We did for a period conduct them in the first and second year and found that the information gathered in the second year was basically a repetition of what we were getting in the first and, therefore, of not a great deal of value because we are interested in how our plantations are doing, however, we do to a certain level conduct survival assessments in the third year following planting.

Q. Mr. Gemmell, what is the practice at Abitibi-Price with respect to survival data?

MR. GEMMELL: A. We collect it, we place

the pots in at plant time and collect data at first, second, and fifth and it's probably because of the learning curve during the 10 years of the planting program that we have done that.

I concur that they aren't necessary or necessarily necessary in the second year. First year is the most important to us.

Q. With respect then generally to the issue of these conditions proposed by the Ministry of Natural Resources, Mr. Waddell, conditions 43, 54 and 56, what then is the position of the Industry?

MR. WADDELL: A. Industry does support parts of these conditions. For example, in condition 43 it proposes a state of the forest report every five years to be submitted to the provincial Legislature and we believe that this is a very desirable proposal and we certainly support that.

Condition 54, will produce an annual report on timber management. Certainly we support that as well.

And condition 56, will result in operational audits that will measure silvicultural effectiveness, and we believe that this is good as well.

So, in summary, to the extent that

conditions 43, 54 and 56 contemplate the mandatory collection and reporting of second-year survival data and other condition information, we cannot support that component of those particular terms and conditions.

Q. Would the position be any different if it was suggested that the assessments be mandatory -- the survival assessments be mandatory in a different year, be it first or third?

My point is: Is there any particular year that is more worthy than another in terms of required across the entire area of the undertaking requirement?

A. Are you asking, would Industry support a mandatory survival requirement in a year other than second?

Q. Yes. Is there any particular year that is more worthy of that kind of a requirement, or are your comments to be taken to apply generally to any fixed year?

A. I think I would have to say that our comments are across the board. We are just very strongly opposed to the mandatory requirement of survival data because, as I have said, we feel that stocking is a much more meaningful measure than survival.

Q. You have said several times in the course of your own evidence, Mr. Waddell, on this panel, as have a number of your colleagues, that from the Industry's perspective flexibility is required in certain types of decisions and most recently you talked about in the context of when you do condition assessments.

What is the position of the Industry generally with respect to the need for flexibility in decision-making? What exactly does the Industry wish to say to this Board about that?

A. Well, I suppose a second year -- considering the mandatory application of second-year survival is a good example of the points we have been trying to make throughout this witness statement and that is simply, again, that we feel that the individual management forester, whether he be on an FMA or whether he be on a Crown management unit, it doesn't matter, he is the person that should be allowed to have the flexibility necessary to make the site-specific decision. And we feel with his professionalism and his expertise and his experience on that unit, he's the best qualified to make these particular decisions and second-year survival is a good example.

Mr. Ferguson may decide that he wants

second-year survival and Mr. Gemmell may want first and third, and Mr. Murray may decide he doesn't want any, all for very valid reasons. And the message we would like to leave with the Board is that we hope that that flexibility will continue and we do not end up with something mandated upon us that will require us to expend our resources, be they financial or people wise, stretching them thinner than they are now to collect data that we feel won't be as meaningful as what we could be doing in another way with that same resources.

Q. Mr. Waddell, could I ask you to go to page 112 in this connection, to page 112 of the Panel 8 statement of evidence, please. Do you have that?

A. Yes, I do.

Q. All right. At the beginning of this section of the witness statement is a discussion regarding the need for flexibility in management alternatives.

Could you take a moment, please, and read the introduction to that section and then indicate for me, if you would please, whether that is the position of the Industry on this issue before this Board?

A. Are you asking me to read the position statement, Ms. Cronk?

Q. Just take a moment and read it to

yourself, if you would please, and then indicate, if you would, whether it is the position of the Industry on this issue?

A. Yes, it is.

Q. Can you assist the Board as to the basis for that position?

A. Well, may I show an overhead at this time?

Q. Yes, by all means.

A. Mr. Ferguson, please. This is the Industry's position statement No. 5 that appears at the front of our evidence panel and it states that:

"Given changing mill and end product demands and the diversity of forest types and site conditions prevalent in the area of the undertaking flexibility in renewal activity decision-making on each management unit is essential and that it's critical that a broad range of cost-effective management alternatives for renewal activities be available to timber managers", again be it FMA or Crown management units.

Given these changing mill and end product demands we really have to have that flexibility to

change our renewal activity program or our management alternatives if our market situation changes or any other local conditions may change.

There are numerous factors which influence the type of renewal activity or the choice of renewal activity that we can carry out, and these were detailed to you by Mr. Squires earlier in his evidence presentation. I would like to go over these again, very briefly with you, and I would ask to have the next overhead turned on, please.

These are factors that influence the choice of renewal operations that the individual manager must evaluate.

First of all, very obviously the future wood supply requirements for the mills, site characteristics of the particular area, accessibility of the area, equipment availability, cost effectiveness of the renewal equipment that is available to the manager, availability of seed and planting stock, and availability of trained human resources, the silvicultural system and harvesting method, the time of year that the operation is carried out, wildlife and other resource values, presence of competing vegetation, and the age of the cut-over that you are trying to renew and the potential for suppression.

And I would add that these are not in order of priority. These are some of the considerations that each manager must take into consideration when evaluating his renewal options.

Q. Do the case studies in your view, Mr. Waddell, provide examples of the various kinds of situations that Industry timber managers are confronted with across the area of the undertaking in terms of renewal decision-making?

A. Yes, they do. The case studies clearly show the variety of conditions that the managers face in the real life situation and they show the variety of options that were actually evaluated and finally implemented in terms of the renewal activity that the individual manager carried out in the field.

And I would just like to refresh your memory on the variety of operations utilized. Would you turn that off, please.

MS. SEABORN: Excuse me, Ms. Cronk, was that part of an overhead package, that last...?

MS. CRONK: That is Exhibit 1140.

MS. SEABORN: Thank you.

MR. WADDELL: What we have here is a listing of the site preparation options that were actually implemented in the case studies of the five

particular companies. The site preparation options that were implemented were: No. 1, the Bracke patch scarifier, second was windrowing with tractors...

MS. CRONK: I'm sorry, Mr. Waddell, sorry to interrupt you.

MR. WADDELL: Yes.

MS. CRONK: Madam Chair, a photocopy of that slide forms part of Exhibit 1139.

MADAM CHAIR: Thank you, Ms. Cronk.

MS. CRONK: Q. Sorry, Mr. Waddell. Would you explain again please what these various options are and where they come from?

MR. WADDELL: A. Yes. These are simply a synopsis or a summary, if you will, of the various site preparation options that were implemented by the five companies from whom you have heard re their case studies.

Case study 4A CP's used a Bracke patch scarifier. E.B. Eddy used two methods, windrowing with tractors and dip and dive with tractors. Abitibi-Price Lakehead used two methods, aerial application of 2,4-D, site prep followed by Marden Chopper and alternately a tractor blading and Bracke. Abitibi-Price Iroquois Falls used two methods, winter shear blading and a deliberate decision in a winter cut not to carry out

site preparation, and G.W. Martin again using the selection cut did not require site preparation.

What I am showing you here now is the regeneration options again carried out in the five case studies. These are broken down into artificial and natural.

Under the category of artificial, first, we had direct seeding of jack pine during mechanical site preparation carried out by CP; secondly, we had planting after mechanical site prep, this was carried out by Eddy; third, we had planting of black spruce after both mechanical and chemical site prep Abitibi Lakehead; and finally, in artificial regeneration we had planting of black spruce after shear blading Abitibi Iroquois.

Under the category of natural regeneration options that were implemented we had black spruce via seed tree carried out at Iroquois Falls; we had black spruce regenerating to black spruce via block cuts and advance growth, again Iroquois Falls; and finally in the tolerant hardwood case study, we had hard maple regeneration using advance growth.

These are all examples of the options that were actually implemented in our case studies.

Q. What, Mr. Waddell, is the

significance -- clearly what you have just shown the Board is a listing of various alternatives that were employed. What in the various case studies that are before the Board, what do you regard as the significance of that?

A. It illustrates to us that there is a wide variation in renewal options that are not only necessary but are actually implemented across an area as wide and as diverse as the area of the undertaking, and it illustrates to us, again, the need for continued flexibility in decision-making in terms of renewal. This flexibility is required both in deciding upon the actual technique and in deciding upon the type of equipment to be utilized.

Secondly, it indicates that there is a wide -- or it indicates the need for a continued availability of a broad range of cost-effective alternatives.

The ongoing research and development may warrant changes in renewal procedures and in equipment and this underscores the need for continued flexibility in renewal decision-making and this, again, was illustrated in the case study by CP's example where they have changed their technique and changed their equipment from what was carried out in the actual case

study for the same sites today.

Q. Thank you very much, Mr. Waddell.

Mr. Nicks, I would like to turn next, if I could, to the issue of the Industry's experience and involvement in renewal activities and generally how a decision-maker might go about assessing the effectiveness of the Industry's efforts in carrying out renewal activities.

Starting first with the experience of the Industry, could I ask you what the position of the Industry is with respect to these issues; that is, both the experience of the Industry timber managers and the effectiveness of the Industry in carrying out renewal activities?

MR. NICKS: A. Yes. Before I begin I have a series of overheads which I would like to deposit with Mr. Ferguson.

---Discussion off the record

MS. CRONK: To assist the Board, there are two packages of overheads to be referred to by Mr. Nicks in his evidence, they are Exhibits 1142 filed last week and that filed this morning of additional materials to be used by Mr. Nicks.

That's 1142, Madam Chair, and the one from this morning was 1147.

MADAM CHAIR: We don't have 1142.

MS. CRONK: 1142. (handed)

MADAM CHAIR: Do you want your copies of 1139 back?

MS. CRONK: Yes. No, actually those were copies, Madam Chair. Thank you.

Q. Mr. Nicks, can you help us with the nature of the Industry's position concerning these issues; that is, both the Industry's experience and the effectiveness in dealing with renewal activities?

MR. NICKS: A. Yes, I can. I would first like to have the overhead of position statement No. 6 which is found on page 117 of our statement of evidence, and this statement is that:

> "The experience gained by the Industry over the years in carrying out renewal activities enables Industry's timber managers to make informed decisions on timber resource management in site-specific areas."

I would next like to talk a little bit about the nature of the staffing within the Industry. First of all, Industry experience with renewal began several decades ago through treatment of industrial freehold lands and these are private lands of course

owned outright by a number of companies. This was followed by regeneration agreements with MNR on Crown lands in the 1970s and even in the 1960s.

The effectiveness of Industry renewal efforts was greatly assisted by the presence of long-term tenured staff. And I would next like to have the projector on, please.

Q. The slide projector?

A. Yes. This is a slide of Figure 6 found on page 119 of our statement of evidence and it's entitled: Experience of Industry Renewal Personnel at the Same Location.

The Board will note that on the horizontal axis is listed total years of experience and on the vertical axis is the number of employees, and what this amounts to is a frequency distribution of staff now engaged in planning and administering forest renewal activities according to their total years of experience in the same location.

This was developed through a survey of 20 FMAs and the result was that the staff as of March, 1989 had an average length of experience of 9.4 years in their current location defined as the piece of real estate that they are now involved with managing.

Q. First of all, who compiled this data,

Mr. Nicks?

A. I did.

Q. What type of staff are you speaking of?

A. I am talking about mainly foresters and forest technicians who are engaged full time in planning and administering timber renewal. I am not including in this the numerous full-time personnel such as heavy equipment operators who do things like scarification that are also long-term employees.

There are a total of 107 staff depicted by this graph and you will note that 8 of the 107 staff had in excess of 20 years experience at their current location at the date of signing of this -- excuse me, at the date of submission of this data.

The considerable pool of first-hand local knowledge that this graph indicates equips Industry staff with the background they need to make appropriate site-specific renewal decisions.

Q. Just looking at this figure, Mr. Nicks, and let's take for example the number 25, would I be reading the figure correctly -- well, perhaps you can tell me. How many people based on this figure have had 25 years experience at the same location?

A. Only one person.

Q. One person. All right. And are we talking operational people here?

A. Not in the sense of operating heavy equipment and things like that, we are talking about people who are involved in supervisory and planning functions.

Q. Does this include people who have dual functions, renewal plus something else?

A. No, these are people who the majority of their time is spent in the planning and administering renewal.

Q. And what is the significance, if any, in your view of the feature of this data that this number of individuals have been working in timber management specifically renewal at the same location?

A. I think it points to the long-term tenure that has been developed in one location, presumably job satisfaction one could even infer, but more to the point it indicates -- or it should indicate at least the degree of site-specific knowledge that people develop through constant and daily work on their licence area, such that when renewal decisions must be made they have the first-hand knowledge of the timber, soils and the success rates and the mill requirements that are necessary to make those decisions.

Q. And turning then to the effectiveness side of the question that I posed to you, are there measures by which the effectiveness of Industry timber managers in carrying out renewal activities can be assessed?

A. Yes, there are. The effectiveness of the Industry's renewal efforts is demonstrated by the following four factors: The extent of the silvicultural program since the introduction of the FMAs, the fifth-year stocking assessment results under the FMA program, the seedling survival results under the FMA program, and the Industry's commitment to effective renewal of the timber resource. And these factors will be discussed in turn.

Q. Do you need the machine on any longer?

A. Yes, I do, Ms. Cronk.

Q. Could you deal with them in order then, and let's start with the first, the extent of the silvicultural program. And the Board has received evidence about that in part already from yourself and Mr. Squires. What is its relevance in this connection?

A. The relevance, I will attempt to restate the information and indicate the relevance. The annual area of the silvicultural treatments within

the area of the undertaking has expanded significantly since the inception of the FMAs. The FMA Task Force Report which is Exhibit No. 940 before the Board indicated the following changes between 1981 and 1987.

This is a slide of Figure 4 found on page 63 of the statement of evidence. It's a graphical depiction of the escalation in site preparation on Crown land since the inception of the FMAs, approximately 1981 to 1987. The area in yellow is the amount of site preparation done on FMA areas by the FMA holder as well as the Crown during the phase-in obligations, and the area in orange would be the amount of area treated on other Crown land within the province.

And one can see that there has been a change from approximately 55,000 hectares to about 110,000 hectares which is a 106 per cent increase in the annual level of site preparation.

Similarly, this is a slide of Figure 5 on the left side on page 72 of the statement of evidence which indicates the increase in regeneration on Crown lands between 1981 and 1988. Again, the total area has risen from approximately 95,000 hectares to about 125,000 hectares and this represents a 30 per cent increase in the annual level of regeneration. The

effect of the FMA program, I would suggest, is fairly obvious as depicted by the yellow area.

And finally this is a slide of Figure 5 on the right side of page 72 of the statement of evidence which indicates the increase in tending on Crown lands coincident with the FMA program rising by a factor of about 95 per cent between '81 and '88. Again, the contribution through the FMA program is indicated in yellow.

And these exhibits clearly demonstrate that the Industry and the Ministry, through it's phase-in obligations, have effected a large and steady increase in the level of renewal activities on Crown lands since the inception of the FMAs.

Q. The second factor that you indicated a few moments ago was related to the fifth-year stocking assessment results that are available?

A. Correct.

Q. Could you outline for the Board, please, what the nature of that data is and again what you regard its significance to be?

A. Well, as Mr. Waddell has outlined to the Board, the fifth-year stocking assessments by the FMA holders are mandatory on all sites treated by artificial or natural means. It's the FMA holder's

- principal renewal obligation to ensure that all treated areas meet minimum stocking standards to acceptable species as outlined in the ground rules Table 1.

The areas which fail to meet minimum stocking standards defined in the FMA groundrules must be reforested to meet such standards at Industry expense. I have available the results in graphical form of summary Table 3 -- I am sorry, it's a slide actually of Figure 7 which is taken from Table 3. It's found on page 125 of the statement of evidence.

And this is simply the depiction in another manner of the information contained both in Table 3 and in Figure 7. I believe the Board has copies of this.

Q. And what does this indicate, Mr. Nicks?

A. It indicates, first of all, the extent of the renewal program and I would, by way of clarification, point out that this is Industry-initiated projects between 1980 and the end of 1983; it does not include the MNR phase-in work.

Q. What do you mean by that, the MNR phase-in work?

A. The MNR has an obligation, or had in many cases past tense now, to reforest a set amount of

land each year, in a sense phasing themselves out and allowing the FMA Industry to phase-in.

For example, in the first year of the FMA they would treat 80 per cent of the area, the second year they would treat 60 per cent, 40 per cent, so that by the end of five years the company was doing all of the work.

Q. And the data in this table pertains, did you say, simply to the work done by the Industry?

A. That's correct.

Q. And again, what do the results indicate?

A. First of all, the results apply to a total of 73,729 hectares that were treated and reported on. I would like to point out that 63 per cent was treated naturally and 37 per cent was treated artificially, and that can be determined by the Table 3.

70 per cent of the area assessed was treated to obtain conifer regeneration and 25 per cent was managed for mixed woods and 5 per cent was intended for hardwoods,

Now, turning to the graph, you can see that the various methods are depicted along the "x" axis or the horizontal axis broken down into three

categories; natural methods, artificial methods - planting and seeding principally - and all methods, which is simply the combination of natural and artificial.

The vertical axis provides a scale which relates to the per cent of the treated area which meets the minimum stocking standards which were set out in the groundrules at the time the FMA treatments were initiated.

The various bars are colour coded so that one can quickly determine to what they apply. The softwoods are indicated by light blue, all hardwoods by dark blue, all mixed woods by red, and all working groups in yellow. The actual per cent of the area in each of those treatment categories that met the minimum stocking standards at five years is superimposed over the bars on this particular graph.

So turning, if I may, to natural methods first, we see that the success rate, if I may term it that, was 63 per cent after five years in terms of meeting minimum stocking. Turning to the middle group of bars, for example, the artificial treatments, planting and seeding, all working groups combined had a success rate of 96 per cent in meeting the required stocking standards and averaging all methods together

80 per cent was the proportion of the treated area that met the minimum stocking standards.

Similarly, for mixed woods, mixed woods were treated only by natural methods. The per cent success was 80 per cent, it's indicated in red, and of course the overall summary would be the same under all methods, 80 per cent. All hardwoods 82 per cent, again only by natural methods.

And summing all working groups together in yellow we see a 70 per cent -- 71 per cent overall success rate of natural means, 96 per cent for artificial and 80 per cent overall for all methods.

Q. All right. Just dealing with the data presented regarding naturally regenerated areas for all working groups, can you compare that for me and for the Board, if you would please, to the results on artificially regenerated areas for all working groups. Just deal with that category?

A. All working groups?

Q. Yes.

A. Natural versus artificial?

Q. Versus artificial, what were the comparative results?

A. Okay. I would restate that 96 per cent is the overall average results for artificial

methods bearing in mind that that is only softwood since that is the only working group category to which artificial applies. We don't for example manage our plant poplar on FMAs as they do in perhaps eastern Ontario. And, of course, for natural methods overall the success rate was 71 per cent.

Q. And dealing with the softwoods category, what is the comparison as between success achieved on natural versus artificially regenerated areas?

A. Again there is a contrast -- even more of a contrast. 63 per cent has been the success rate observed versus the 6 per cent for artificial methods.

Q. What conclusions do you draw from this data, Mr. Nicks?

A. Well, overall I would tend to suggest that these results are very acceptable particularly for artificial methods, even for natural methods if one bears in mind the minimal cost or lack of cost in many cases for performing natural regeneration.

I would conclude that the Industry managers have prescribed the correct renewal treatments in those cases, and I would also state that the apparent contrast between natural regeneration and

artificial is perhaps premature to judge the normal free to grow period.

For example, Madam Chair, Mr. Martel, for black spruce regenerated through natural methods it's in the order of 10 years, and the Industry manager who submitted this information had great competence by the tenth year that the areas regenerating naturally to spruce will be at a higher rate of success than at the moment, so I would expect that by 10 years of age at 63 per cent the level will have risen.

Q. Are there sites, Mr. Nicks, where artificial regeneration is not practicable if managing for preferred species?

A. Yes, there are. An example of that would be in the lowland black spruce with a high water table where it would not be feasible in some cases to plant, it's much better to leave advance growth to black spruce.

Another example would be in aspen, it's not only infeasible, it's unnecessary to artificially regenerate since by simply cutting the area sunlight reaches the forest floor, the ground warms up, and root suckers emerge, that takes care of regeneration.

Q. Well, conversely, are there sites where natural regeneration is not practicable if

managing for preferred species?

A. Absolutely, and I think you have seen an example in our case study where in a mixed wood condition, particularly on fine textured soils, particularly if there is no seed source at the time of harvest - and that might apply to something like white spruce - there is no way one can reasonably expect white spruce to regenerate under those conditions, so artificial treatments are the only feasible way of ensuring a new crop of softwood.

Q. I would like to refer you now, Mr. Nicks, to a number of interrogatories that were delivered. If we could start first with Interrogatory No. 28 from Forests for Tomorrow.

MS. CRONK: That formed part of Exhibit 1138, Madam Chair, Mr. Martel.

Q. Do you have a copy of Interrogatory No. 28 from Forests for Tomorrow, Mr. Nicks?

MR. NICKS: A. Yes, I do, Ms. Cronk.

Q. Would you outline for the Board again the nature of the enquiry and the information provided in the response?

A. Yes. The question was in reference to one of our statements on page 92, the second paragraph of the witness statement. The question from

Forests for Tomorrow was:

"On what amount of the FMA areas can Industry predict the results of its silvicultural program?"

And our answer was that:

"The Industry is confident that it can predict the results of its silvicultural program on all of the FMA areas with a very high probability of accuracy."

And I believe this statement is supported by the evidence which I have just put before the Board in the form of the last graph and by Table 3 of the statement of evidence, and we went on to say that the table indicates, for artificial regen to all working groups, a 96 per cent success rate in achieving the predicted outcome. And we qualify that with the statement that the results of natural regeneration are inherently more difficult to predict for a variety of reasons, some of which are outside the manager's control. And this is reflected by the lower success rate indicated in Table 3 for natural regeneration; that is, 71 per cent for all working groups.

So to summarize that, I would suggest to the Board that the predictability of artificial treatments is very high and the predictability of

natural regeneration is not quite as high, but I think with experience, particularly over the next five years, we will receive confirmation or not as to whether our belief that areas that don't meet standards at five year will in fact have regenerated by 10. This applies primarily I would suggest to the spruce working groups.

Q. You were asked as well, Mr. Nicks, at this time in Interrogatory No. 11 from the Ontario Ministry of the Environment - and that forms part of the interrogatories filed this morning, Madam Chair - you were asked to describe, if Industry was in a position to do so, what the factors were that resulted in a lower success rate for regeneration by natural methods than by artificial; that is, what went into the 63 per cent success rate for naturally regenerated softwood compared to the 96 per cent.

Were you by way of a response to that interrogatory in a position to provide some of the information that has been requested?

A. Yes, I am. I would like to review the question and the response that we gave in response to the question of the what factors are in the result of a lower success rate for regeneration by natural methods. That really only applies to black spruce and jack pine, according to our table, and the reasons for

black spruce success being lower for natural, first of all, that there were fewer and less uniformly distributed suitable microsites due a lack of site preparation such as shear blading which Mr. Gemmell has described.

The second major reason, and a very significant reason in recent years, is the inadequate seed source due to the feeding of spruce spruce budworm on the foliage, the buds and the male flowers of mature black spruce. It's been a particular problem in the -- well, the period covered by these projects because, as perhaps Mr. Martel may recall, in northeastern Ontario we have had a severe epidemic of spruce budworm in the mid to late 70s and that extended all the way from Sudbury north to Hearst, and this is the effect in part.

The third reason would be the invasion by weeds, brush and undesirable tree species due to a lack of site preparation. And, as I have stated before, it should be noted that most managers believe acceptable spruce stocking will eventually be obtained, for example, when there is a bumper seed crop but only after a time delay of at least 10 years.

The rationale for the lower success rate in jack pine is basically twofold: a lack of site

preparation which preserves the thick drought-prone duff layer and prevents penetration of the jack pine radical or emerging root into the moist mineral soil which is necessary for survival and growth; and, once again, severe competition due a lack of mechanical and chemical site preparation.

Those were the principal reasons for the difference in our view and that is from consultations with the contributing forest managers.

Q. The third factor that you had mentioned as being a mechanism or measure by which the effectiveness of Industry could be assessed in renewal activities could be assessed related to seedling survival results.

MS. CRONK: But again I note the time, Madam Chair, and I am in the Board's hands as to when you wish to take the afternoon break.

Now would be convenient for me, if it is to the Board.

MADAM CHAIR: Let's do that, Ms. Cronk. We will be back in 20 minutes.

MS. CRONK: Thank you.

MADAM CHAIR: Thank you.

---Recess taken at 3:10 p.m.

---On resuming at 3:35 p.m.

MADAM CHAIR: Please be seated.

Ms. Cronk, will you be going to five o'clock, and I ask only when you are going to finish because the court reporter has been by herself today and so we will have to break before we start the scoping session.

MS. CRONK: I was discussing it over the break myself and in reviewing the materials I have I think it would be about quarter to five, ten to five, and depending on where we are then, I would ask the Board then to take a short break before the scoping session started at five because Mr. Cassidy will be attending it and I will not and I have to move some of these materials out.

MADAM CHAIR: That is what we will do then.

MS. CRONK: That's fine.

Q. All right. Mr. Nicks, before we took the break then, you were reviewing the fifth-year stocking assessment results that are now available with respect to the first 16 FMAs. And may I ask, before we leave that area, why is it that the data presented applies to 16 FMAs?

MR. NICKS: A. Because those were the only FMAs that had the potential to have information

available on fifth-year stocking, and the reason I say potential is because one of the FMAs, ours in particular, was signed in 1981 I believe and -- 1980, excuse me, for the Lower Spanish Forest and it was included in the list, but because there were no renewal treatments done because there was no harvesting done, then that particular FMA did not get reported on.

But nevertheless for the sake of simplifying and putting a time limit we suggested that this would include all 16 FMAs to the end of 1984 -- I am sorry, to January 1st of 1984.

Q. So are the results in Table 3 then reflective or not reflective of all fifth-year stocking assessment results currently available concerning FMA holder companies?

A. Currently available, current as of the date which is indicated on Table 3.

Q. Thank you.

A. To the end of 1988.

Q. And with respect to the results, the stocking assessment results set out in Table 3, was there any instance for any proposed working group where the area stocked to minimum was less than the required 40 per cent stocking standard under the FMA agreements, just looking at the results for softwoods, mixed woods,

hardwoods and all working groups?

A. Was there any area for which the stocking was below the minimum?

Q. Yes.

A. Yes, there certainly were areas.

Q. All right. And where do we find those on this table?

A. They would be illustrated in the final column of Table 3. It would simply be a matter of subtraction. To determine the per cent of area which was not stocked to the minimum or to determine the actual area that was not stocked to the minimum, one would simply subtract the area in the second last column called area stocked to minimum from the treated and assessed area indicated in the third column.

Q. And looking at the final column on the far right in Table 3, is that the basis for Figure 7 on the next page?

A. Yes, it is.

Q. And dealing overall with those areas that were renewed using natural regeneration methods in the softwoods, mixed woods, hardwoods and all working group categories, did any areas overall fail to meet the minimum?

A. Yes, there were areas of course. For

example, all softwoods by subtraction of 63 per cent from 100 per cent we can assume that 37 per cent of the softwood area treated by natural means after five years had not met fifth-year stocking requirements.

Q. Sorry.

A. It is legitimate at that point to re-describe the area for natural regeneration under the recognition that the regeneration period for black spruce is 10 years in most FMAs.

MADAM CHAIR: Excuse me, Mr. Nicks. Can you just go through that calculation on Table 3 and show us again how you derive that?

MR. NICKS: Okay. For example, Madam Chair, under natural renewal, looking at proposed working group all softwoods, which would be the seventh line, we see on the extreme right an area of 63 per cent -- a figure of 63 per cent which applies to the per cent of the area which is stocked to minimum standards, or higher I might add, and that the converse of that is 37 per cent, 100 per cent minus 63 is understocked.

MS. CRONK: Q. And similarly with respect to all softwoods in the artificial category, dealing with the 96 per cent?

MR. NICK: A. Right. Again by

subtraction, 100 minus 96 leads one to conclude that approximately 4 per cent of the area treated by artificial means is less than the minimum stocking according to the surveys that were undertaken as required by the FMA.

Q. And conversely 96 per cent met the minimum stocking?

A. That's correct, or exceeded.

Q. Sorry?

A. Or exceeded.

Q. Just dealing with the areas naturally regenerated then, let's take the softwood example, the 37 per cent, does that mean in your view that 37 per cent of the area treated was a failure?

A. It's a failure in a technical sense according to the terminology of the groundrules, however, there is an equal probability that the stocking on those areas could be 39 per cent as opposed to 1 per cent or zero per cent, and as the evidence of Mr. Squires previously in Thunder Bay indicated, stands of I believe 37 per cent stocking which he illustrated do produce acceptable softwood volumes.

I would, by analogy, perhaps draw the Board's attention to a case on our Upper Spanish Forest where about three years ago we undertook a study to

relate stocking and density in a mature jack pine to the yield, and at that time we did a very intensive operational cruise on a mature jack pine stand 70 years of age, determined there were approximately 250 trees per acre in that stand, we ribboned off the area, we had crews cut and concentrate the volume at the landing and then we did a very intensive scale measurement on that particular piece of real estate, and I believe the figure was approximately 30 cunits to the acre that was generated.

So from only 250 trees per acre at maturity, which would correspond to 25 per cent stocking, according to the four-square metre concept, we realized a volume of approximately 30 cunits. So I would concur with Mr. Squires that high volumes at a mature stage at least are quite possible from relatively low stocking.

Q. Could we turn then, Mr. Nicks, to the seedling survival results available under the FMA program and could you outline for the Board, please, what the nature of the data is and explain it, please?

A. May I have the projector, please.

Q. The slide projector?

A. Yes, please. Now, as outlined in Section 5.3.5.2 of the statement of evidence, survival

statistics, in particular second-year survival are not routinely collected by all FMA companies for the reasons that have been discussed. However, for the six six FMA holders that routinely perform second-year survival assessments, these are the results.

This is a slide of Table 4 found on page 127 of our statement of evidence and, again, a similar approach to some of the previous slides: The tree species listed on the horizontal axis, being jack pine, black spruce, white spruce, red pine.

The average survival scale on the vertical axis. The source, second-year assessment as provided by six FMA companies. The bareroot stock indicated in light blue, container stock indicated in magenta or red, whatever you prefer.

The results firstly for jack pine indicate 86 per cent survival for bareroot stock after 2 years; 90 per cent for container stock for black spruce; 81 per cent for bareroot in blue; 80 per cent for container in the red; white spruce, 79 per cent; and red pine, 93 per cent.

Two things I would like to point out to the Board, that white spruce and red pine are relatively minor components of the planting program within certainly these FMA companies and I think the

FMA industry in general. The jack pine and black spruce account for the vast majority of the planting. So those are the results of particular interest.

And a second comment I would make is that particularly in the case of black spruce we believe that the survival rates are on the increase and this is due we believe largely, or partially at least, to the direct contract relationships which I believe Mr. Squires mentioned between the FMA holder and the private growers.

This was an initiative suggested by the MNR and accepted by the Industry to tie ourselves more closely with private growers so that we would have communication in terms of what stock we wanted by species, by container type, by specifications, delivery date and a whole host of other advantages. It even gets into the area of seed source control.

So in our view, through discussions with the growers directly, the quality of plant stock is on the increase and I would suggest that the survival rates, at least as have been suggested to me by other managers in this situation, are on the increase as well.

Q. Having regard to the evidence which Mr. Waddell has given and which you yourself gave

earlier this afternoon concerning the usefulness of second-year survival data for example, what is it that you suggest the Board should take from this data?

A. Well, I think that to support one of Mr. Waddell's comments, the survival rates generally tend to be sufficiently high that good stocking is obtained and it's not a major concern to the Industry at the moment; that is, survival.

We find that stocking assessments are much more useful in terms of giving us an overview of what is going on in our plantations and other seeded and naturally regenerated areas, however, I would like to leave the Board with the impression that the stocking assessments -- excuse me, survival assessments are of value to me personally.

For example, when we re-negotiate a contract with a private grower or a new grower or change container type, for example, then the manager may wish to establish survival plots for a specific purpose because there has been a change in practice, and I would suggest that that is a valuable exercise to go through.

Q. And can I ask you then to turn next, if you would please, to the fourth factor that you earlier mentioned, and that is, the Industry's

commitment to renewal of the timber resource. How, in your view, is that demonstrated in the area of the undertaking?

A. Industry's commitment to forest renewal is demonstrated by a number of factors and I draw the Board's attention to a slide. This is a slide of the main points on page 128 and 129 of our statement of evidence.

Simply restated -- I believe the Board has a copy of this slide.

MS. CRONK: To assist the Board, that was part of Exhibit 1142: Just give us a moment.

MR. NICKS: Yes.

MS. CRONK: Exhibit 1142, Madam Chair, is a copy of which I provided to the Board and the Board returned to me. I am not sure that the Board requires it, given that the slide is available, but if you wish it, I have a copy here.

MADAM CHAIR: We will look at the slide, Ms. Cronk. Thank you.

MS. CRONK: Q. Mr. Nicks?

MR. NICKS: A. Yes. The indicators of the Industry's commitment to renewal, Madam Chair, Mr. Martel, are sevenfold; the first being the voluntary acceptance of the responsibility for renewal when the

Industry signed the FMA agreements, something we willingly accepted for the reasons that Mr. Waddell described, in that it allows us to have a direct effect on future wood supply and to maintain our companies and the economy of our communities and the jobs that we provide.

The second reason or indicator of Industry commitment is the intensive forest management practices that have been developed. You heard evidence to that effect today from a number of companies; the magnitude of the Industry programs as earlier alluded to by the graphs from the FMA Task Force Report. There has been a very significant increase in renewal operations on FMAs. The positive fifth-year stocking assessment results which I have covered recently and which are found in Table 3.

The fifth indicator is long-term staff tenure which again I described earlier with an average duration of employment in the same location of 9.4 years as of last March. I think it's fair to say that's probably averaging 10.4 years at the moment since I am not aware of any significant staff changes within Industry.

The sixth indicator is the allocation of resources to renewal, and by this I mean the allocation

of human resources in terms of staff, hiring of new staff, the purchase of specialized site preparation equipment and even the purchase, one could suggest, of specialized harvesting equipment such as wide-tired skidders and roadside delimbers to enable full-tree harvesting which benefits renewal.

And the seventh, a very significant indicator of our commitment to renewal, is the very considerable capital investments in mills that have been made within the area of the undertaking by FMA holders. Our own mill in Espanola, over $200-million has been invested since 1981 in expansion and improvement of our processes which Mr. Boswell discussed I believe.

So that indicates that we intend to be around for the long term and renewal is our way of guaranteeing that.

Q. Well what overall, Mr. Nicks, is the Industry's position concerning it's role in renewal activities?

A. I perhaps could have the last overhead or the next overhead, Mr. Ferguson, and projector off, please.

Our summary statement is that the Industry remains capable of and committed to the

planning and implementation of balanced environmentally appropriate timber renewal activities on Crown lands in the area of the undertaking.

MS. CRONK: An overhead of that, for the benefit of the Board, Madam Chair, is part of Exhibit 1137 that was filed this morning with respect to Mr. Nicks.

Q. I would like to turn next then, if I could, gentlemen, to the issue of environmental effects and environmental benefits or otherwise of renewal activities. And perhaps, Mr. Waddell, if I could return to you.

Are there, from the Industry's perspective, environmental benefits to renewal activities? What is the position of the Industry in that regard?

MR. WADDELL: A. Yes. We feel there are certainly environmental benefits from forest renewal and, Mr. Ferguson, if I can ask you to turn to my overheads, please, I would like you to put on the next one there for the Board.

This is position statement No. 7 of the Industry. Thank you. Our position is that properly managed timber renewal activities are environmentally sound activities. As we have previously stated, it is

the Industry's position that ensuring the renewal of the timber resource is essential to achieving a reliable and sufficient future wood supply of quality raw material to the Industry's mills. The timber resource in the area of the undertaking is far too important to be left to near chance and as long as society demands a continued supply of wood, continuing renewal of the wood source is mandatory.

Renewal activities, however, should also been viewed as environmentally sound and beneficial as well as necessary. The MNR in its evidence before the Board has outlined the environmental effects of timber renewal activities on the forest estate, terrestrial wildlife, the aquatic environment and socio-economic environment. The Industry agrees with a number of conclusions reached by the Ministry in their statement of evidence, Panel 11, and I don't propose to go into these, simply to say that it's extremely important that we realize that renewal has a positive impact on the environment.

In summary - and I would ask again, Mr. Ferguson, if you would go to the next overhead, please. - it's the Industry's position that renewal activities are, first of all, essential to the maintenance of the forest estate, they are environmentally sound,

primarily beneficial to all users, fundamentally positive and periodic in that they occur only once during a rotation.

And in summary of this particular section, we must realize that without proper renewal a reliable and adequate future wood supply will not be available in the area of the undertaking for the mills of the Industry.

Q. Mr. Waddell, Panel 9A to be called on behalf of the OFIA/OLMA concerns environmental effects. Will that panel be dealing with the effects of renewal activities?

A. No, it will not. My understanding is that Panel 9A deals with the effects of harvesting and pesticide use.

Q. And what is the -- perhaps I should ask you: Why then are the effects of renewal activities not dealt with in that panel, or I take it from your evidence, by this panel?

A. I am sorry, I don't understand what you asked me, Ms. Cronk.

Q. Why is it that renewal effects are not being dealt with in Panel 9A; does the Industry have a position in that regard?

A. With the environmental effects?

Q. Of renewal.

A. Of renewal?

Q. Yes.

A. Well, that is dealt with in Panel 8.

Q. Fine. And with respect, I understand that is why you are here, but with respect to Panel 8 and in light of the evidence that the Ministry of Natural Resources has led, does the Industry take a position one way or another on that evidence?

A. Yes. We have reviewed the Ministry's evidence that they have presented in Panel 8 and 11 and we are relying on their evidence as presented.

Q. All right, thank you. Could I ask you then to turn next, if you would please, Mr. Waddell, to the entire issue of how renewal activities in the area of the undertaking might be enhanced or improved in the future, and could I ask you with respect to that issue specifically, from the Industry's perspective, how can renewal activities best be improved?

A. Well, the Industry believes that a major thrust towards improving the timber renewal activities in this province would be the development and implementation of a new timber production policy, and this is one of Industry's positions. And if we can

have our next overhead, please, Mr. Ferguson.

This is Industry's position statement No. 8. There is a need for a revised timber production policy formulated jointly by the Ministry of Natural Resources and the Industry to identify future regeneration levels and funding commitments necessary to meet anticipated wood supply requirements.

Q. As I have with respect to the other position statements that you and your colleagues on this panel have indicated to the Board, I am going to ask you next, if you would, to explain the basis for that position; why is that the Industry's perspective?

A. Yes. Going back to 1972 when the original forest production policy came in it very definitely resulted, between 1972 and 1988, in an increase or an acceleration, if you will, in forest management activities -- I should say, renewal efforts here rather than forest management activities, that resulted in an acceleration of renewal activities across the area of the undertaking. And this is shown in the statistics that are produced in our renewal witness statement on page 121.

The same report concluded that the 1972 forest production policy was an important mechanism within government to achieve a continuing funding

commitment to renewal. It's our opinion, however, that the 1972 forest production policy is no longer adequate to predict long-term wood supply and demand across the area of the undertaking. We believe that there is an urgent need for the production of a new timber production policy and implementation schedule.

This conclusion has been reached by both Professor Baskerville in his forest audit and again by the Forest Management Task Force.

Q. From the Industry's perspective, why is it important to it that it be involved in the preparation of a new timber production policy?

A. We believe very strongly that Industry must be involved in developing the new timber production policy because, first of all, we are carrying out a large part now of the renewal program in Ontario, at least in the area of the undertaking, I believe it's approximately two thirds of the area regenerated is being regenerated by the Industry, therefore, we are a major player and we wish to sit at the bargaining table.

The second reason is that obviously a timber production policy is of vital interest to our industry and to our future, and I might add, again referring to Professor Baskerville and the FMA Task

Force, that they both supported Industry involvement in the production of any new timber production policy.

Q. From the Industry's perspective again, always from that perspective, what should a new timber production policy do?

A. Well, in general terms a new timber production policy should provide broad direction to the timber managers across the province both on CMUs and on FMAs to develop appropriate timber plans and programs and objectives. And, in our opinion, a new timber production policy would have some very positive benefits to all concerned.

And, Mr. Ferguson, the next overhead please, and we will identify what we see these broad positive benefits to be.

First of all, a new policy would identify Industry's raw material requirements for the future. Once you know what you need in terms of wood supply you can then identify the level of renewal necessary to produce those future requirements.

Falling naturally behind that, once you know the level of renewal necessary you can determine the level of funding necessary to implement the required level of renewal, so it's a very logical sequence; first you've got to identify the raw material

requirements then you identify the level of renewal necessary and then the funding necessary.

Finally, we believe that a very positive benefit would be that a new production policy would assist in obtaining the provincial government's commitment to the required funding level as occurred in 1972 with the initiation of the forest production policy.

Q. I'm sorry?

A. Excuse me. I was just going to add, Ms. Cronk, that the new policy would also identify for each FMA and each CMU the part that they would play in achieving the objectives and it would balance Industry's requirement for quality raw materials with the timber productive capacity of the unit.

Q. Unit by unit?

A. Yes.

Q. Are there any particular events or factors that have of late influenced the Industry's perspective that a new timber production policy is urgently required?

A. Yes. Our belief that a new policy has been required has been influenced by three factors in particular: First of all, our experience with some of the provisions of the forest management agreement;

secondly, the nursery stock cap and the production forecast of nursery stock; and, third, the funding of silvicultural projects generally in the past year or two.

Q. I am going to ask you to deal with each of those, Mr. Waddell, in turn. Could we start with the first which you indicated, as I wrote it down, was the Industry's experience with some of the provisions of the FMAs.

Can you assist as to how that is related to the need for a new timber production policy and what you mean by that?

A. Yes. Under the terms of the forest management agreement the Minister is obliged to supply the FMA holder with all nursery stock and seed that the FMA holder requires to carry out the silvicultural activities that have been approved on his area and approved in the annual work schedule. The FMA holder assumes the obligation to carry out the projects, to plan for them and implement them, in return the Minister commits to fund certain silvicultural treatments.

If the FMA holder's renewal treatments fail, then he is obligated, being the FMA holder, is obligated to retreat at his own cost. So there are

joint obligations on both besides; the Minister has some, the FMA holder has some, and if either party is unable for whatever reason to meet its obligations, then obviously the contractual agreement doesn't work, and the bottom line is that the renewal program is adversely affected and, on the long-term, the future wood supply for the area of the undertaking could be in jeopardy.

Also, you must remember that the Minister's ability to fund the FMA program is always conditional upon the allocations received on an annual basis from the provincial Legislature, so the overall results of these provisions is that we believe that without a new timber production policy there is no certainty and no assurance that there will be adequate long-term funding to permit the effective implementation of our renewal objectives.

Q. How are those arrangements that you have described related to the need for a new timber production policy?

A. Well, a new timber production policy would examine if the current government commitment to the FMA program is sufficient to permit full performance by the Minister of his obligations under the FMA.

Q. And the second factor that you indicated, as I wrote it down, was the nursery stock cap and production forecasts?

A. Yes. The Industry has become concerned because of recent developments in this area. We are concerned that provision of nursery stock for both FMAs and Crown management units may not be sufficient to meet the requirements that are out there in the field and we believe that this situation will probably continue to exist until a new timber production policy and implementation schedule that would develop the need for a level of renewal is developed.

In other words, we don't see the situation changing until there is a new policy that says how much is enough, how much is required. At the present we don't feel that we have this.

Q. Well, what is the basis for the concern with respect to the cap, or this issue?

A. Well, there is two areas there that have raised our discomfort level. The first would be the nursery stock cap that was imposed by the Ministry of Natural Resources in, I believe it was 1986-87, and the second element that gives us concern is the Ministry of Natural Resources production forecasts for

nursery stock that they have put before the Board in previous evidence.

Q. Well, can we deal first with the production forecasts and could you elaborate for the Board as to the nature of the concern in that regard?

A. Yes. Exhibit 547 of the MNR, and I would ask Mr. Ferguson to please show that now by the overhead, this indicates the stock demand and production forecasts for 1989-91.

Q. Could I stop you there just for a moment, Mr. Waddell. Is the overhead that you are showing now Exhibit 547, or is it derived from that exhibit?

A. It's a combination of Exhibit 547 and evidence produced by Mr. Waito of MNR in previous testimony. Mr. Ferguson, could you move that a little to the right and get that line a little the other way, please.

MS. CRONK: Does the Board have available to it a copy of Exhibit 547?

MR. WADDELL: These demand forecasts give rise to several concerns by the Industry, if you will.

MS. CRONK: I am sorry to interrupt, Mr. Waddell. Can we even that out a bit. Either way you are cutting it. Thank you. I think perhaps this is

part, Madam Chair, of I believe the overheads originally marked for use by Mr. Waddell. Mr. Shibatani tells me it's part of Exhibit 1139, if you are having trouble reading that.

MADAM CHAIR: Thank you.

MS. CRONK: Q. Sorry, Mr. Waddell.

Could you explain, please, what these numbers indicate to the Industry and what the nature of the Industry's concern is?

MR. WADDELL: A. Yes. If you will note on the left side you see the demand forecast for 89-90, going across to the right you see the production forecast. There is a difference of about 36-million trees shortfall in 89-90.

The following year, which is the year we are now in, the demand forecast essentially is the same 177-million, however, the production forecast has dropped by about 8 to 9-million trees.

So while the demand for nursery stock remained static, the Ministry's forecast production dropped by more than 8-million trees.

The Exhibit 547 in Mr. Waito's evidence also indicated that strong production levels will depend upon the forecast demand and upon the financial ability of the government to fund this aspect of the

timber management activities. Further, Exhibit 547 production levels beyond 1990 will depend upon the availability of resources for the entire timber management program and the priorities that will direct the use of these resources.

So it's very clear from those statements that availability of government funding will dictate production levels in the future. And this exhibit clearly shows that while we have no assurance from the government that the production forecast is going to even stay the same, it may go down, the demand forecast for the 91-94 period raises or increases each year, so that by 93-94 we are up to a demand forecast of 190-million trees. And I must emphasize that these are not Industry figures, these are the Ministry's own figures. So obviously we have a very real concern here.

Assuming that these predictions are essentially accurate, this means that there will not be adequate nursery stock available over the next five-year period to meet the demands.

Q. Can you explain next, if you would please, what the nature of the Industry's concern is with respect to the cap and perhaps you should explain, first, what you mean by the nursery stock cap?

A. Well, the nursery stock cap - and as supported by Mr. Cary in his evidence before the Board for the Ministry - the nursery stock cap, as we understand it, was imposed by the Ministry of Natural Resources and it's a cap or a ceiling that sets a maximum on the total annual nursery stock, both bareroot and container, that the Ministry will either produce from their own nurseries or purchase from the private sector nursery, so it is an imposed ceiling.

And in 1987 our understanding is that this cap was set at 160-million trees for the whole province. In 1990 this cap has been increased from 160 to 162-million, but some of that is intended for private lands and private lands, as we are all aware, is not within area of the undertaking. Not only that, but of that 162-million not only is some of it intended for private lands, but some of it is going to go to Crown lands outside of the area of the undertaking.

Q. What was the cap set at as the Industry understands it for the years following 1990?

A. As we understand it, and as I believe the Ministry has given evidence, the cap for 91-92 is 162-million which is the same as 1990, and I don't believe we have had any indication beyond 91-92 as to what the cap may or may not be.

Q. And what is your understanding of the proportion of that 162-million stock availability that is to be available for Crown lands?

A. Crown lands within the area of the undertaking or Crown lands in general?

Q. Let's just deal with Crown lands in general first.

A. Our understanding is that of that 162-million, about 147-million is available to Crown lands.

Q. Well, what from the Industry's perspective, Mr. Waddell, have the consequences of the cap been to date as it's now, based on what you have said in evidence, been in place. The Industry has had some experience with it since 1987, what are the consequences of it to date?

A. Consequences from our perspective are that in some areas FMA holders and no doubt Crown management unit foresters have had to carry out renewal prescriptions that is not their preferred; in other words, in some areas the preferred option for whatever good reason was to plant, because of the cap they were unable to get the required level of nursery stock and they of necessity then carried out an alternate silvicultural prescription, albeit still within the

groundrules, but an alternate prescription that, in their opinion, was a less preferred option.

Q. And have there been any other consequences of it to date?

A. Yes. I would add that in some cases when the FMA holder has submitted an annual work schedule in the fall of the year and detailed the number of trees that were required to plant for the following year for his particular FMA and the Ministry has advised him that that level of stock is not available and, therefore, we have been requested to reduce the requirement in our annual work schedule.

Q. What has the result of all of that been insofar as the Industry is concerned?

A. Well, the result has been that we have carried out alternate, less preferred renewal treatments on the areas that we would have preferred to have plant on.

Q. Well, has the cap resulted, Mr. Waddell, to the best of your knowledge in harvested areas being left untreated in the area of the undertaking?

A. To my understanding it has not, it certainly hasn't in our FMA and, as far as I know, it has not in the FMAs but, as I say, the areas that the

manager wanted to plant, he was forced to treat with a less preferred option still within the silvicultural groundrules but a less preferred option.

MADAM CHAIR: Excuse me, Mr. Waddell. If over the five-year period of a timber management plan you are unable to regenerate to the extent that you had planned for, what would happen to change that plan? Would you require an amendment in the plan to justify that, or alternatively, if you are unable to regenerate NSR areas because you had insufficient planting stock available, what would be the situation in that case?

MR. WADDELL: Let me say, first, Madam Chair, that there is a clause in most FMAs that removes the FMA holder from the contractual responsibility for bringing lands through to free to grow status if the province has been unable to provide the required renewal funding.

That answers I think the second part of your question. On the first part of your question --

MADAM CHAIR: Well, it answers it to the extent that you would prefer to plant, but if you were unable to plant, would you still be obligated to seed or do some sort of site prep to encourage natural regeneration?

MR. WADDELL: We would be obligated to

carry out -- providing there was adequate funding for a lesser cost treatment, we would be, in my opinion, obligated to treat the area in a manner other than planting, provided that that option we selected was within the options available to us in the silvicultural prescriptions of our own particular forest management agreement.

MADAM CHAIR: Are you saying with the example of the cap on nursery stock production and government spending on silvicultural generally that it's not just affecting planting, that you see the underfunding in other aspects of silvicultural work as well?

MR. WADDELL: Yes. At the present time there are other aspects being underfunded and we are going to get into that in a few moments with specific examples.

What I think the point right now that I was trying to make on this is that the nursery cap itself, in our opinion, has not resulted in areas being left untreated, they have been treated but in a renewal manner which is less than -- less preferred by the particular manager.

MR. MARTEL: A couple of years ago there was, I understand, 3-million trees produced too much.

Whatever happened to those trees?

MS. CRONK: Sorry, Mr. Martel, I didn't hear the last part.

MR. MARTEL: A couple of years ago I believe there were I believe 3-million trees produced in nurseries which weren't, I guess came under the cap, and I am just wondering what happened to those 3-million trees?

MR. WADDELL: I am not sure, sir, that I know to what you are referring there. Are you referring somehow to that death of trees at the Thunder Bay nursery?

MR. MARTEL: An excess of 3-million.

MR. WADDELL: Can anybody on the panel help me on this one. I am not sure what Mr. Martel is referring to.

MR. SQUIRES: Mr. Martel, I am not sure I can help you with the answer. I think I know what you are talking about, two years ago in the northcentral region there was reported that there was some excess seedlings.

MR. MARTEL: 3-million. I was wondering if anyone knew what happened to them?

MS. CRONK: Can anyone on the panel help Mr. Martel with that?

MR. SQUIRES: I can help. I am not sure I have the total answer or the correct answer, I know it as it was reported in the media.

MS. CRONK: I'm sorry, sir, I will intervene when it's a question from the Board - and no disrespect intended Mr. Squires - but if that is the source of the answer he's about to give you, speaking as counsel for the OFIA/OLMA, I would appreciate being given a chance to see if I can confirm this information and provide you with an accurate answer on behalf of the OFIA/OLMA.

MR. MARTEL: I won't hold it against him.

MS. CRONK: Well, that's different then. And, Mr. Squires, you can answer if you wish, but if you are unsure, I would ask you to take the time to check.

MR. SQUIRES: I will take my counsel's advice.

MS. CRONK: You have my undertaking, sir, that we will return to it in the morning.

Q. Apropos however of questions from the Board, another type of enquiry was raised, Mr. Waddell - perhaps I can direct this to you - during the scoping session for this panel, and it had to do with the reasons why the cap was imposed.

And could I ask you, insofar as you are aware, speaking for the Industry, do you know why the cap was imposed and, if so, could you explain why?

MR. WADDELL: A. I certainly can't speak with any degree of authority on this. Industry was not privy to the Ministry's reasons at the time they made the decision. We can certainly have a considered opinion on it and; that is, that we believe the cap was related to funding constraints and a possible reallocation of priorities within MNR.

We don't feel that the cap was related to the biological needs of the forest, in the sense that it was not tied into the level of planting that the managers felt was required.

Q. When the Industry indicated in Exhibit 1137, the Panel 8 statement of evidence on renewal, that the rationale for the cap was in part administrative, using that term deliberately, Mr. Waddell, was in part administrative in nature; what was meant?

A. When the Industry used the term?

Q. Yes in the witness statement, statement of evidence, Exhibit 1137.

A. Yes. I feel we used that word in the same sense that I just described it, that we used the

term, it was an administrative cap in the sense that, in our understanding, it was not connected to the biological needs of the forest and, therefore, it was an administrative cap, it wasn't tied in to the actual needs of the renewal program.

Q. Did the Task Force on Forest Management Agreements, about which the Board has heard in other evidence, consider the issue of the cap?

A. Yes, it did.

Q. And, as I understand it, you participated in that task force; is that correct?

A. Yes.

Q. And what were the findings of the task force with respect to the cap?

A. The task force recommended that the Ministry should re-examine the rationale for the nursery stock cap. They also recommended that this should be done in conjunction with the re-examination of a new timber production policy and that this exercise should be done with Industry participation, and if the re-examination indicates that higher stock levels were necessary, then funding should flow accordingly both to stock production and to associated areas of silviculture.

And the final part of the FMA Task Force

recommendation was that the Ministry should proceed with this as quickly -- proceed with developing a new timber production policy as quickly as possible.

Q. What is the Industry's position on those recommendations or those findings, Mr. Waddell?

A. The Industry certainly supports and endorses them wholeheartedly.

Q. Leaving aside the issue of the cap as you have described it and as it has been imposed by the Ministry of Natural Resources, what is the Industry's perspective on the concept of a cap on nursery stock production?

A. Well, if there is going to be a cap it must be related, as I have said before, to the biological needs of the forest; it can't be one that is arbitrarily imposed, it has to be -- it has to take into consideration the renewal priorities, the need for planting on the different management units and be related to that.

We feel that the development of a new timber production policy will lead to the assessment of a future wood supply and that, in turn, will work back to the renewal requirements necessary to meet these needs.

Q. I'm sorry. Why from the Industry's

perspective is a cap inappropriate?

A. Well, there are several situations --

MR. FREIDIN: He didn't say that.

MS. CRONK: Sorry?

MR. FREIDIN: I didn't think he said that, I thought he said it would have to be tied to the biological needs.

MS. CRONK: Q. I am sorry, I had heard that. Let me put it to you. It's late in the day but my friend, Mr. Freidin, has a problem with the way I put the question. From the Industry's perspective, is a cap appropriate or inappropriate?

MR. WADDELL: A. I believe that any cap is inappropriate if it's not related to the biological needs of the forest because there are certain situations out there, such as situations where if conifer regeneration is your objective planting is normally the preferred objective in the groundrules, and on many sites planting is the only realistic alternative, and if you have got a cap on there that is not at a sufficient level to permit you to acquire the necessary nursery stock for those sites, those sites are not going to get planted.

So in that situation, a cap would be inappropriate.

MR. MARTEL: I hate to ask you this question, but while it might not be appropriate - and I can see your reasoning - if you were sitting in the Treasurer's position and he didn't have the money, how do you resolve the dilemma of trying to allocate what is necessary for forestry as opposed to, let's say, what's necessary for housing, as opposed to what's necessary for everything else that is going on out there?

MR. WADDELL: A very fair question, sir, and I guess it gets all down to a matter of priorities. And speaking as an industrial forester, our priority at this moment has to be to ensure a future wood supply for our mills in northern Ontario and for the people of northern Ontario, and from that perspective we believe a cap is inappropriate. From the larger perspective in Queen's Park, they may see it differently. I hope not, but ...

MS. CRONK: Q. Dealing then, if we could perhaps as the last matter today, Mr. Waddell, with the third item that you mentioned and, that is, the funding of silviculture generally. First, to what were you referring?

MR. WADDELL: A. Sorry, my mind is still on Mr. Martel's question.

Q. The Treasurer, as are several of the provinces with you, sir, but we will leave that for another day.

A. Would you try that again?

Q. Yes. Leaving aside the Treasurer, the third item that you mentioned was the funding of silviculture generally as being relevant from the Industry's perspective to the need for a new timber production policy.

From the Industry's perspective, how is that relevant; what is the issue there from the Industry's point of view?

A. Well, the issue is that in 1989-90 there were funding cutbacks on the FMA program for silviculture treatments, and I might add that up until that year, since the inception of the FMAs in 1980, by and large the Ministry was able to provide basically a hundred per cent of the silvicultural requirements of the FMA holders, so it came as a bit of a shock and certainly a disappointment in 1989 when we were cut back on some of our programs.

Our concern is that this suggests that the Ministry may not be in a position to adequately fund regeneration and silvicultural treatments on Crown lands in the area of the undertaking.

Q. What cutbacks specifically are you referring to?

A. Well, in several instances FMA holders when they submitted their annual work schedules were told by the local Ministry office that they could not meet -- the Ministry could not meet the level of funding requested in the annual work schedule, so the FMA holder was requested to cut back the program that he was requesting in the annual work schedule.

Q. Can you detail that for the Board?

A. Yes, I can.

Q. What specifically occurred?

A. And. -- Oh, I am sorry, I have got a slide for this one. This is a slide, the Board has been given the overhead, it's Exhibit 1148, and we have simply fancied it into a slide here.

And what it shows, the light blue, which is the last block in the background, in each case is the available area. Now, that is the area, the collective area that the FMA holders requested work to be done; in other words, it's the area they identified required some form of renewal treatment in the annual work schedule for 89-90. The dark blue is the areas that were actually funded by MNR, and the red in the foreground is the deficit.

So if you follow that through, on the left-hand side you will see for mechanical site prep that there was a deficit of 22 per cent between the areas that the FMA companies requested and the area which the Minister was able to fund.

Moving across from left to right, you see that for chemical site prep there was a deficit of 16 per cent for planting, a deficit of 6 per cent for seeding, aerial seeding that is, 20 per cent, and for aerial application of herbicides a deficit of 13 per cent.

And again I stress that these deficits are the difference between what the FMA holder identified the need to be and what the Minister was able to fund.

MS. CRONK: I should point out, Madam Chair, that the actual copies or photographs of that slide were provided to the Board this morning.

MADAM CHAIR: Yes.

MS. CRONK: Q. Mr. Waddell, just dealing with this slide first, were cutbacks experienced by all FMA holders in the 1989-1990 planning year?

MR. WADDELL: A. No, they were not experienced by all FMA holders, and I have no rationale as to why some FMA holders were cut back and others

were not, I don't know whether it went by district or by region, but the simple answer to your question is no.

Q. What have the consequences of these cutbacks been, insofar as you are concerned?

A. Well, if I could translate those cutbacks into area, if I can see my own notes here, the 22 per cent cutback in site prep translates -- the 22 per cent cutback in site prep translates into a total of 16,600 hectares and that means 16,600 hectares that are out there requiring site preparation that weren't able to be treated this past year.

And the significance of that is that mechanical site prep is usually the first treatment in the forest in the timber renewal program. So if you don't do that, then obviously the subsequent treatments that normally would flow such as planting or seeding are also going to be reduced and the reduction at that level will be felt in this year.

The 16 per cent chemical site prep cutback translated to 25,075 hectares. Seeding which is the lowest cost artificial regeneration treatment we have, was cut back to the point where over 6,300 hectares were not done, and for aerial tending it was 9,155 hectares that no money was received for. And the

problem with this, of course, is that tending usually has a fairly narrow window and if it is not done in the appropriate year the competition which the tending is intended to knock down, the competition will reduce the growth of the softwoods, if not smother it. So it's very vital that a tending program be carried out as nearly as possible to the appropriate year.

Q. Mr. Waddell, I want to be very clear about this. To date, have these cutbacks had a significant negative impact on renewal in the area of the undertaking insofar as the Industry is concerned.

A. No. I think it's fair to say they have not had a significant impact on renewal for the Industry. I don't think you can call it a significant impact.

The reason I say that is that it's only one year and if funding is received in the next year it will be possible for us, I hope, to catch up on these cutback areas. So that one year in the life of a forest is not that significant, provided that it is not just a tip of the iceberg and this isn't the beginning of things to come.

MR. MARTEL: What was in this year's budget?

MR. WADDELL: Do you mean what --

MR. MARTEL: What is proposed this year as a result of the budget coming down several weeks ago?

MS. CRONK: I am sorry, sir, you mean the provincial budget?

MR. MARTEL: Yes.

MR. WADDELL: I am sorry, I can't compare what was in the FMA budget this year to last year. Most of us in the companies have not received our allocations yet for this year from their respective Ministry district, some have and some haven't.

For instance, in our Lower Spanish Forest we have not received the budget and in the Upper we have, and then it's not in writing it's just verbal.

So I was purposely avoiding not making any comments on the 1990 situation because it's not clear yet. I had hoped to have some figures to discuss at this time, but I don't.

MS. CRONK: Madam Chair, Mr. Martel, I do have some more questions for Mr. Waddell in this general area but given the hour, if it's convenient to the Board, may I suggest that we adjourn now and that I complete this in the morning.

Based on where I am at the moment, I would expect to finish shortly in the morning, I won't be that much longer, about half an hour.

MADAM CHAIR: That is fine, Ms. Cronk. We will take a break now. Why don't we come back at 5:15 and we will do the scoping session.

MS. CRONK: Thank you very much.

MADAM CHAIR: I don't know how long that will take, but I don't think it will be more than half an hour.

MS. CRONK: Sorry. I have spoken with Ms. Devaul as well and enquired whether it would be possible for us to leave some of our materials in the room tonight and what the security arrangements might be in that regard, because, like the Board, in moving all these materials down there has been a certain shuffling to get materials here and I am informed that --

MADAM CHAIR: The door can be locked.

MS. CRONK: Thank you. We can leave --

MADAM CHAIR: So leave everything.

MS. CRONK: Thank you. Thank you very much.

MADAM CHAIR: We will be back at 5:15.

---(Witness panel withdraws)

---Recess taken at 4:50 p.m.

---On resuming at 5:15 p.m.

MADAM CHAIR: Please be seated.

MR. CASSIDY: I would like to note for the record, Madam Chair, that those in attendance at tonight's scoping session consist of Mr. Freidin, Ms. Seaborn and myself and I also note that the scoping session is being held in Toronto, not Thunder Bay, where it cost me $1.20 to take the subway to get here.

MADAM CHAIR: Yes, thank you, Mr. Cassidy. The Board has made the same observation. Did the parties who were here this afternoon during the evidence leave estimates with you in terms of their cross-examination time for Panel 8?

MR. CASSIDY: The only party who I saw here other than those present today was Ms. Swenarchuk for Forests for Tomorrow and she was not able to give me an estimate as to the timing with respect to Panel 9A - and I was unable to speak to her about Panel 9B - as I have to confer with Mr. Castrilli, who I understand will be cross-examining on Panel 9A.

I should also indicate that it's now our intention to lead this evidence in a consecutive fashion; that is, deal with Panel 9A in both examination and cross-examination and then commence Panel 9B in examination-in-chief. The major factor in that is cost savings to our client which, as I indicated when we started back in February, costs are

escalating for not only the other parties but for us as well and, therefore, we intend to proceed in that fashion.

MADAM CHAIR: All right. Thank you, Mr. Cassidy.

I didn't have a chance to ask Ms. Cronk today, any news on Panel 7, do you expect to follow Panel 8 --

MR. CASSIDY: Yes, we expect --

MADAM CHAIR: With Panel 9?

MR. CASSIDY: We expect to follow Panel 8, as I understand it, with Panel 7.

MADAM CHAIR: Oh, all right.

MR. CASSIDY: But now that you have raised that, I better confirm it, but my impression was that was the case as of late last week.

MR. FREIDIN: That was the case when I spoke to her today.

MADAM CHAIR: That Panel 7 will be following Panel 8?

MR. FREIDIN: Correct.

MR. CASSIDY: Our information is that the witness who was ill is on the mend and will be able to be here for the commencement of Panel 7 as soon as Panel 8 is complete.

MADAM CHAIR: All right.

MR. CASSIDY: Or the recommencement of Panel 7.

MADAM CHAIR: Thank you, Mr. Cassidy.

The Board has a few matters of clarification with respect to Panels 9A and 9B.

With Panel 9A, we note the comments in Item 10 of the executive summary where Beak Consultants refers to various ways of mitigating the effects on wildlife and they point to such things as ***bearing harvest patterns and shapes and maintaining standing timber.

Is Beak's evidence that these factors apply only where there is a local concern for wildlife? In other words, in Dr. Methven's evidence we thought he indicated fairly clearly that there was no basis for limiting clearcut size or constraining harvesting patterns with respect to regeneration of the forests, but we are assuming that Beak is saying: Well, you have to do these things with respect to wildlife concerns, but that will be directed towards areas where those concerns are specific as opposed to the entire area of the undertaking generally.

A small matter on the phraseology that Beak used in terms of first and second order streams.

Has the Board heard that term used before? We don't think so. We think we understand what those terms mean, but I think this is the first introduction of it. I don't believe we used that sort of terminology in MNR's evidence.

MR. CASSIDY: Okay.

MADAM CHAIR: We just want to clarify and make sure that was the case.

And a final point with respect to Panel 9A, on page 7, Beak seems to support MNR's featured species approach but on page 9 they seem to recommend a combined habitat supply analysis approach.

Is it the view of Industry that they support a habitat analysis approach based on Beak's evidence? I believe in your terms and conditions you talk about an adaptive management approach, but we wanted to clarify that that related to what Beak was discussing in terms of habitat supply analysis.

There are two points with respect to Panel 9B. The first one is a very broad point and, that is: Do Drs. Rodricks and Rachman have full confidence that the EPA registration process upon which we rely to a certain extent in Canada is responsive to making timely changes as new scientific information becomes available?

They point out examples of, for example, the Dinoseb example of cancelling registration that took a period of five years. The EPA also took two years to decide not to do a special review of 2,4-D and the statement is made that emergency suspension is rarely used.

The Board wants to satisfy itself that the evidence of these witnesses is that the EPA process is flexible to changing when new scientific evidence becomes available in terms of pointing out potentially damaging aspects of chemicals that were not recognized before that point.

And the second clarification we want of environ is whether these witnesses see any justification for undertaking some type of quantitative risk assessment with respect to the probability of health risks associated with exposure for forestry pesticides as they are used in Ontario.

MR. FREIDIN: Can you repeat that one, Madam Chair?

MADAM CHAIR: Yes. It seems to us that the environ witnesses are saying -- well, they don't answer that question. They spent a great deal of time talking about the types of quantitative risk assessment that can be undertaken, and we want to have their

answer of whether or not there is any justification for doing some type of quantitative risk assessment with respect to the possibility of human health risks associated with exposure to forestry pesticides as they are used in the Ontario context.

And those are the Board's questions for this panel.

MR. CASSIDY: Madam Chair, I have no questions in respect of the statements of issues that can be raised today inasmuch as the parties which I might have questions about are not present, so I am going to have to deal with those parties individually.

I just would like to clarify for our purposes our understanding of who is going to be cross-examining with respect to the various panels.

Our information is that with respect to Panel 9A we have five parties cross-examining; Forests for Tomorrow, MNR, the Nishnawbe-Aski Nation, the Anglers & Hunters, and MOE. And my information with respect to 9B is that Forests for Tomorrow, MNR, Nishnawbe-Aski Nation and possibly MOE will be cross-examining.

Are there any other parties that the Board is aware of?

MADAM CHAIR: No, we have not heard from

any of the other parties.

MR. CASSIDY: Thank you.

MS. SEABORN: In relation, Madam Chair, to Panel 9B you will note in the covering letter I provided to the Board dated May 2nd, 1990, I requested in that letter that the Board allow us leave to ask questions of Panel 9B should a matter arise that directly affects my client.

We have not filed a statement of issues that relates to the executive summary for 9B and you will recall that we did not cross-examine Dr. Ritter in relation to human health effects and so at this point I do not intend on cross-examining in relation to that panel, but I will be here throughout the evidence and I would like the opportunity, should I think it necessary, to ask the Board at that time for a short period to ask any questions.

MADAM CHAIR: Thank you for notifying the Board, Ms. Seaborn. We will certainly consider it at that point.

MS. SEABORN: Thank you.

MR. FREIDIN: Am I correct -- do I assume correctly that there has been no estimate of cross-examination time then for any parties other than--

MR. CASSIDY: That is my understanding as well.

MR. FREIDIN: --other than people who are here?

MADAM CHAIR: That doesn't help you very much; does it, Mr. Cassidy?

MR. CASSIDY: Well, perhaps I can ask Ms. Seaborn if she can indicate in respect of Panel 9A - that would be at least a start - what her estimate is.

MS. SEABORN: Three hours.

MR. CASSIDY: And, Mr. Freidin, in respect of both Panel 9A and 9B?

MR. FREIDIN: Half a day.

MR. CASSIDY: Half day for each panel?

MR. FREIDIN: No, half day for 9A, probably an hour for 9B.

MR. CASSIDY: I will just have to communicate with the other parties, Madam Chair, and if I get any further information I will endeavor to advise the Board.

MADAM CHAIR: Well, the Board appreciates that, Mr. Cassidy. It's not fair for the person who is leading the case to have to go out and do the detective work in terms of trying to ascertain how much time these parties think they might be in cross-examination.

Mr. Martel and I will have to sit down and go over what we think about this participation at the scoping session, what kind of cooperation we are getting from these parties. It seems that it has been dwindling off quite a bit in the last couple of weeks.

MR. FREIDIN: There was an order, if you recall, that attendance was mandatory for those parties who want to cross-examine. I am not suggesting any remedy, I am just reminding the Board that there was an order of that nature.

MADAM CHAIR: Thank you, Mr. Freidin.

MS. SEABORN: Has there been any indication from Mr. Hanna how long he intends to be with the renewal witnesses? That would certainly affect whether or not I will be cross-examining that panel this week or whether we will have to hold it over until next week.

MADAM CHAIR: Ms. Devaul?

HEARINGS LIAISON OFFICER: At least a day.

MADAM CHAIR: At least a day, is that --

HEARINGS LIAISON OFFICER: At least one day. That was in the letter with the statement of issues I believe for Panel 8.

MR. CASSIDY: That letter is dated May

3rd, 1990

HEARINGS LIAISON OFFICER: And I have been talking with Dr. Quinney last week, he was still indicating a day, a solid day. I am not sure what that means.

MADAM CHAIR: And how long is Forests for Tomorrow with Panel 8?

MS. DEVAUL: Ms. Swenarchuk indicated--

MR. FREIDIN: At least a day she said.

MS. DEVAUL: --a day or perhaps a bit less.

MR. FREIDIN: She said today maybe a bit less but her original estimate was at least a day. This afternoon she said maybe.

MADAM CHAIR: Well, that certainly takes care of this week with Forests for Tomorrow and the OFAH, which means that Mr. Freidin and Mr. Seaborn wouldn't be on until next week.

MR. FREIDIN: I think between the two of us we will take a full day, pretty close to a full day. We might be able to re-examine, we might not.

MADAM CHAIR: So we might be starting Panel 7 next Wednesday afternoon -- or Tuesday afternoon.

MR. CASSIDY: Yes. I think our witnesses

are operating under that assumption, that they will be back on the stand on Tuesday.

MR. FREIDIN: Tuesday afternoon?

MADAM CHAIR: Yes. We are sitting Monday, Tuesday, Wednesday next week.

MR. FREIDIN: Oh, I see. If we finish on Monday evening, the re-examination will start Tuesday morning?

MADAM CHAIR: Yes.

MR. FREIDIN: Okay.

MADAM CHAIR: All right. Is there anything else?

MR. CASSIDY: No, Madam Chair.

MADAM CHAIR: Thank you very much.

---Whereupon the hearing adjourned at 5:30 p.m., to be reconvened on Wednesday, May 9th, 1990, commencing at 8:30 a.m.